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GERIATRICS

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Each period of life—infancy, adolescence, maturity, and involution—presents special problems for the physician. The study of infancy and its diseases has given rise to the specialty of pediatrics, but a similar study of the involution period seems to have been neglected. There should be physicians who will make an intensive study of the needs and care of the involution period, the diseases peculiar to that period and the modifications in the symptoms and course of other diseases and injuries when they occur in the aged. The objective should be not only to prolong life, but to increase the happiness and efficiency of the individual as well.

At the present time there are special reasons for attention to the subject of geriatrics. Statistics show a marked decrease in infant mortality and a gradually increasing life span. It follows from this that in the future there will be a much larger proportion of the population over the age of sixty years. From a report of the Committee on Population Problems to the National Resources Committee, May, 1938, it appears that in 1930 there were about twelve million children under five years of age, and six and one-half million over sixty-five years of age, but if present trends continue, by 1980 there will be only six and one-half million of children under five, and twenty-two million over the age of sixty-five years. Due to the fact that industry and institutions are enforcing rules for retiring at a certain age and the effect of pension systems, social security acts and similar laws, a large number of these older people will find themselves without their regular employment but in a position where, with limitations, they may do as they please. Wise and intelligent advice at this period would seem especially necessary.

It is difficult to set a definite chronologic

age limit for this group. Some people age much sooner than others. The fact is that involution changes do not occur simultaneously in all organs and functions of the body. Either the weaker parts wear out faster or some part is used or abused to a greater extent than others. Our advice must be based on some definite and useful criteria of actual age rather than chronologic age. In this respect statistics and averages are of little use. We need to know what organs and what functions have degenerated and to what degree. A special series of observations or tests could be devised to show these changes but it should be emphasized that these are not tests for diseases, and having completed a series of such observations, together with a general physical examination, we are in a position to know the individual and his special incapacities as of that time, and when we add to this a knowledge of his economic and social situation, his previous training and work, and his special aptitudes or desires, we can lay before him a plan for living and doing which will fit all the requirements of his case. Stanley Hall once observed that old people constitute "a class in the community that is somewhat alien,

its intrinsic nature but little known, and the services it was meant to render but little utilized."

Seventh Decade One of Change

Sometime between the ages of sixty and seventy most men are confronted with the problem of a change in their human relationship. They may retire and do nothing, they may continue their former occupation, they may change their occupation or modify their relation to it, or they may take up some hobby or amusement, such as travel, to occupy their time and thoughts. Of course, social and economic factors will influence this decision. In the case of many large corporations or institutions, retirement at a certain age is the rule, but where a man is an independent business man or professional man, the decision is his own. The retirement rule for executives is undoubtedly a good rule. Change is a law of growth and the rigidity of method and mental attitudes that develop with age is bound to be in conflict with the progressive ideas of the younger element.

For those who love their work or who feel compelled to continue it from economic necessity, a modification of the work might be advised, but it is a mistake to make the older man a director or planner, such as is often done. It should rather be a step in the direction of routinising the work, leaving the responsibilities of direction to younger minds. This may be a blow to the older man's pride but it is certainly better for his health and the health of his company. Other things being equal and in the absence of any special factors, one advises the man over sixty to continue a previous occupation or interest, modified only to the extent of lessened responsibility and more fixed routine.

Heredity Fundamental for Longevity

The cause or causes of involution change is not known. Perhaps the view most widely held is that there is a certain amount of vital force or energy in each living tissue and that, when this is exhausted, involutional changes begin. The source of this energy is inherited, and hence heredity plays an important part in the life span of the tissue or organic structure. The study made by Brunie shows "heredity is the fundamental requirement for longevity." Sir William Gowers made use of this

idea in his explanation of the cause of certain degenerative diseases of the nervous system; he called them abiotrophies. This theory of abiotrophy could be extended to cover many of the so-called involutional diseases.

Another widely held idea is that the involutional changes are the result of use of the parts affected. If the body is looked upon as a piece of machinery, this view seems plausible, but it does not agree with the facts of every-day observation. Practically all of the organs of the body are strengthened by constant use and atrophic changes are delayed, thereby. Even the abuse of an organ does not lead to changes like those of senility.

Toxic Theory Not Valid

The theory that senility might be due to some toxin in the body or to the presence of some systemic poisoning (Metchnikoff) or of some focal infection, has been advanced. This theory is enticing as it holds out the hope of preventing or indefinitely postponing the changes of old age. Unfortunately, one can find no real proof of the validity of this theory in spite of reported instances of longevity due to some special diet or mode of life. Old age and involution changes will continue to occur in spite of our best efforts to prevent it. What we can do is to make adjustments in the living conditions and in the management of the diseases of the aged person.

Evidence of involutional change may be noted in all parts of the body. In old age there is a loss of the subcutaneous fat, especially noted on the back of the hands; loss of elasticity of the skin, which may be measured by pinching the skin and noting the time it takes to assume its former state, also by the presence of fine wrinkles; the loss of pigment control and vicarious pigmentation; and, finally, the desiccation of the skin due to glandular atrophy. The skin changes are likely parallel changes in the heart and blood vessels. Alopecia and greying of the hair are generally regarded as involutional signs but they are too variable in age of onset to be of any special significance. The mucus membranes show changes similar to those in the skin and their occurrence in the lining of the membrane of the gastro-intestinal tract may account for some digestive disturbances of the aged.

In the eyes an arcus senilis is some indication of aging, although it may occur in youth in certain families. Presbyopia is a better indication and tables have been made by ophthalmologists showing the degree to be expected at different ages. It should be remembered that presbyopia does not imply a loss of visual acuity and that exophoria parallels the presbyopia.

Demineralization of Long Bones

Changes in the bones and joints are not only good tests of age but are often clinically important because of the possibility that they may be mistaken for evidence of disease. The x-ray study shows a progressive rarefaction of the long bones in old age. The sternum is usually a solid mass at sixty with complete calcification of the costal cartilages. In woman the costal cartilages solidify somewhat earlier, possibly at the age of forty. The hypertrophic spurs on the vertebrae is another sign of old age.

The lung changes of old age are not especially significant. The best known is the so-called senile emphysema. It is extremely variable and its occurrence suggests that the individual probably has had hay fever or asthma. X-ray study shows a descent of the bifurcation of the trachea which is constant with advancing years.

The x-ray is of considerable assistance in the study of senile changes in the circulatory system. The descending aorta is difficult to see in a person under thirty, and the size, shape, and position of the aorta changes with age. The arch becomes elongated so that it becomes greater than the vertical diameter of the heart instead of less, as in the youthful. At sixty, the iliac arteries are almost invariably calcified.

The blood chemistry of the aged does not differ materially from that of maturity. The response to certain tests, such as the blood sugar tolerance curve, may show some changes, but these are not definite. O. H. P. Pepper states that a curve showing a marked storage defect is not uncommon.

Atrophic Changes in Gland Structure

The glandular activities of the aged are obviously lessened due to atrophic changes in the gland structure, and this applies to the ductless glands as well. However, instances of serious failure of gland activity, such as would threaten life, are rare in the older group.

The involution of the sex glands of the female, as shown by cessation of menstruation, occurs regularly and at a comparatively early age, but, contrary to popular opinion, this may be attended by few if any other signs of involution. The activities and desire of the female remain practically unchanged.

In the male the activities of the sex glands seem to be much more variable. Instances of impregnation by men over ninety years of age are not uncommon and in Brunie's study he found that sixty per cent of the men had retained their sexual power to the age of eighty years. The reason for this variability is unknown.

The kidney of old age is the arteriosclerotic type and usually functions well enough unless under some exceptional stress, such as the ingestion of a poison or a serious burn of the skin, et cetera. Pepper found some kidney atrophy in ninety per cent of old people at autopsy but not true nephritis.

According to Dr. Reed Nesbit, the bladder shows no definite senile change. The tendency to incontinence in the old is most likely due to senile change in the spinal cord, impairing the reflexes, and is also, in part at least, due to a senile cerebral condition. Hyperplasia of the prostate is not a sign of age but of disease, and may occur in the young. It has no correlation with sex potency (Reed Nesbit) and you could not use either as a test for senile changes.

In the female genitalia the noticeable changes are the loss of elasticity of the parts—labia, etc., the smoothing out of folds and regression in size. The mucous membrane is pale, smooth, and glistening, and the rugae smoothed out. The cervix is reduced in size and projects less in the vagina, so that eventually the cervix and vagina are on a plane. The upper portion of the vagina is narrower and the uterus smaller.

Circulatory Changes Very Important

The importance of the circulatory changes in old age can hardly be overestimated. It is recognized in the old saying that "a man is as old as his arteries." There is a gradual loss of elasticity in the wall of the arteries that often closely parallels the loss of elasticity in the skin. The statement that the systolic blood pressure should be one hundred plus the age of the individual is based

on the assumption that the heart will continue to contract with its accustomed vigor, but that gradually hardening arteries will impede the flow of blood and, therefore, cause a rise in the pressure. A rise in the systolic blood pressure in elderly people can be anticipated and, even if it exceeds the usual amount, might be considered desirable as indicative of a healthy cardiac condition. The danger of a bursting vessel, cerebral hemorrhage, for instance, is not as great as the danger that the diminishing calibre of the artery will lead to a local stoppage of the circulation, cerebral thrombosis, and the higher blood pressure tends to prevent this. Arteriosclerotic change is especially likely to result in a local thrombosis, either in the brain or elsewhere, under circumstances that lower blood pressure, such as operations, rest in bed, or even if a part of the body, such as a leg, is placed absolutely at rest. The importance of transient lowered blood pressure in causing thrombosis, either cerebral, coronary, or peripheral, is emphasized by many authors (Pepper and others) and this is true even though the habitual blood pressure may be high. In 1905, Dr. C. W. Burr, of Philadelphia, and myself, pointed out that in cases of hemiplegia, due to cerebral thrombosis in old people, it was dangerous to keep them absolutely quiet in bed for the reason that they would develop weakness in the arm or leg opposite to the paralyzed side. Necropsy showed that this paralysis was due to a degenerative neuritis and a partial thrombosis of the arteries on that side. It could be prevented by having the patient exercise the non-paralyzed side.

In the heart itself, the only change that is due solely to age is a degree of myocardial degeneration, difficult to detect except by the response to exercise and to drugs (?). It would appear that the greatest number of deaths from heart disease do not occur as a result of old age but rather in the interval between fifty and sixty.

In civilized communities the prevalence of pyorrhea and early decay of the teeth often results in their loss at an early age. Consequently we can no longer regard their loss as evidence of senility, and, due to the skill of the modern prosthetic dentist, the loss of teeth is not a serious handicap. There is an hereditary factor in early tooth decay as in premature greying and loss of

hair, which must also be taken into consideration.

The changes in the nervous system may be among the earliest and most significant in old age. These do not appear in all parts simultaneously. The peripheral spinal nerves are not affected early as a rule unless there is some added factor, such as deprivation of vitamin B. In many cases there is evidence of change in the autonomic nervous system as shown by the reaction to cold or heat, and to drugs, but definite neuropathologic changes in these tissues have not been found.

In the spinal cord, senile changes may occur early and be marked and typical. The pathologic change consists of a slowly progressive degenerative change in the posterior and lateral columns of the spinal cord, somewhat similar to that seen in cases of pernicious anemia, but with more of a tendency to be an annular or marginal sclerosis. There is a marked increase in pigment deposit, both in the grey and white matter, and numerous corpora amylacea, especially at the periphery of the cord. The patient develops a marked weakness in gait, which is stiff, slow, and dragging, but complete paralysis is rare. There are practically no objective sensory changes except some loss of vibratory sensibility but often complaints of subjective sensory disturbances. The tendon reflexes are diminished in about half the cases, but rarely lost.

There are some neurological disorders that are definitely connected with a senile degeneration of certain parts of the nervous system. Perhaps the most common of these is paralysis agitans or Parkinson's disease. While a similar syndrome may occur in the young as a result of chronic encephalitis, syphilis, or head trauma, the type which is due to a progressive degeneration of the lenticular nucleus is rare before the age of sixty. The bent-over posture, the flexed position of the extremities, the shuffling gait, the general rigidity and tremor, all suggest an exaggeration of some of the common phenomena of advanced senility, yet the pathologic process is really limited and the sensibility and mentality are not generally affected. The prognosis for recovery in such cases is hopeless but much can be done to overcome the difficulty by keeping the patient active, both physically and mentally; by special training, and by the use of some drug of the atropine group which tends to

lessen the rigidity and tremor. The use of benzedrine, which has been suggested for these patients, has not been of much value in the cases in which I have tried it.

Senile Tremor

Senile tremor is often a distressing phenomenon in the aged. It is allied to hereditary tremor, which rarely develops before the age of forty, although it may come on earlier in successive generations. This tremor affects the head as early or earlier than the extremities and is not usually accompanied by the other signs of paralysis agitans. It is not affected by drugs. As a rule it is not disabling, although it may be annoying on the ground of appearance.

Persistent insomnia, often with reversal of the sleep rhythm so that the individual sleeps during the day, may be regarded as a senile condition, although it is often entirely unaccompanied by any other neurologic sign or symptom. It is difficult to overcome this condition and the fact that a similar phenomenon sometimes occurs in chronic encephalitis lends credence to the theory that it may be due to some localized degenerative change in the neighborhood of the third ventricle, the so-called sleep center. The use of the ordinary hypnotics such as the barbiturates, chloral hydrate, bromides, and so on, is undesirable, first, because they are ineffective unless given in large doses and long continued, and second, because they are likely to give rise to unpleasant mental disturbances in these elderly people, such as hallucinations, deliria, et cetera. An adjustment of their routine activities and meal hours is sometimes of benefit. Warm baths, massages, changes in bedding, et cetera, should all be tried. I have found that alcoholic drinks at bedtime may be of some use.

Perhaps the most common and most feared neurologic conditions in the old are those due to cerebral circulatory conditions—cerebral arteriosclerosis, cerebral hemorrhage, and cerebral thrombosis. Cerebral arteriosclerosis can occur quite independently of arteriosclerosis elsewhere in the body and seemingly results from strenuous mental activity. Cerebral hemorrhage is more common between the ages of fifty and sixty, when the heart is strong and the patient active.

In cerebral thrombosis there is usually no

evidence of shock effect and the condition often occurs during sleep. If the thrombosis affects an artery supplying one of the so-called silent areas of the brain, the effect may not be noticed. When cerebral thrombosis occurs in the aged it usually indicates cerebral arteriosclerosis of the angitis obliterans type combined with a relatively low blood pressure. It is not advisable to give drugs that lower blood pressure but the iodides may sometimes be used to advantage. Certainly these patients should not be kept in bed if it is possible to avoid it.

Mental Changes Incident to Old Age

The mental changes of old age have been the subject of considerable discussion. It is as true here as in other aspects of involution, that there is such marked variation in individuals that it is impossible to lay down any general rule. Perhaps one of the earliest indications of change in most cases is a certain lack of elasticity, a kind of mental rigidity, corresponding to the physical rigidity of muscles and other tissues. It is shown by a desire to live by established formulae and a dislike of change. This rigidity is often misinterpreted as an inability to learn, but more often it is a disinclination.

Another characteristic of old age is a failing memory, especially for recent events. This has a tendency to be progressive so that eventually almost all of the daily events are forgotten and only the memories of childhood remain. Naturally this is accompanied by a corresponding impairment of judgment.

With the beginning of old age there is likely to be an accentuation of previous character traits, so that the suspicious type become paranoic, the saving become miserly, and the fearful, anxious type develop depressive and hypochondriacal delusions. The desire for financial security becomes almost an obsession, often resulting in such absurdities that the man of eighty starves himself in order to save up money for his old age.

A diagnosis between the mental changes due to cerebral arteriosclerosis and those due solely to senility is not easy. In general, one may say that the senile changes are more gradual and steadily progressive, and that the arteriosclerotic may show paralytic phenomena, aphasia, convulsive seizures, et cetera, and more neurologic findings.

Each a Law unto Itself

No general rules can or should be laid down to govern the activities or mode of life of elderly people. The variations in their previous life habits and in the aging process itself is too great. Advice with reference to clothing, exercise, diet, et cetera, must be individualized.

In arranging a diet, personal preferences must be considered. Neither the meat eater nor the vegetarian can prove his contention that his health or longevity is due to his diet. Perhaps the most important point is to prevent the patient from becoming a food faddist of any kind, and to prevent overweight. It might be remarked in passing that King Gustave of Sweden, who, at the age of eighty, plays a fine game of tennis, is six feet, three inches tall, and weighs 125 pounds. The tendency to constipation, common in the aged, may be combated by special diet, but I can see no objection to the regular use of cascara sagrada, or the official aloin, belladonna and strychnine pill. It has a tonic effect on the bowels which is necessary under the circumstances. I think that the routine use of oil or saline laxatives is not advisable.

The amount of physical exercise taken by a man plays an important part in his health and happiness. The advice to take exercise and more exercise often given to elderly people is a mistake. I have found that in some cases, even a light simple setting-up morning exercise may leave the patient fatigued all day. The man whose life has been chiefly sedentary and who is unused to exercise should be advised to take only such exercise as he enjoys, and preferably such activities as moderate walks, a nine hole game of golf on a fairly level course, rowing a boat or paddling a canoe in calm water, or playing croquet. It is true of course that many oldsters engage in strenuous exercise but no man should be advised to take up in later years a form of exercise to which he is unaccustomed, unless it be of the lightest. The late Chauncey Depew, president of the New York Central Railroad, and a brilliant old gentleman who lived to give out birthday interviews long after most of his admirers expected him to die, when asked what kind of exercise he took, said: "I get my exercise acting as pallbearer to my friends who exercise." While I am warning against exercise, I

should also warn against the opposite extreme. Laplace and Nicholson (*Journal of the A.M.A.*, Vol. 110, No. 4, January 22, 1938) point out that prolonged recumbency may be a contributing cause of death in elderly people. A number of surgeons recognize this fact and insist that elderly patients become ambulant as soon as possible after an operation. Massage will not take the place of exercise in such cases.

A really important feature of the advice to any elderly person relates to his mental activities. To the man who has an occupation or profession that requires his constant attention it is, of course, superfluous, but to the man who is retiring or who is unemployed, it is a great problem, the more so perhaps because it is often not recognized as such. The exigencies of the situation may require a complete change of occupation and interests. Although this may cause some difficulty, such adjustments are not impossible if it is remembered that it takes time and the patient does not become discouraged. Previous hobbies can become useful occupations and the more they can be worked into a daily routine, the better. Many men look upon the age of retirement as a time to travel. If the individual is not too old and is somewhat used to travel so that he can adjust himself to the difficulties that travel may bring, this may be satisfactory. I have advised against travel if there is any serious physical disability. I might mention that I have found old people frequently enjoy an ocean voyage, especially the routine life on smaller ships.

The factor of old age, as it modifies the symptoms and management of disease, is often an important consideration.

In refracting elderly people, it is better not to use a mydriatic because it is not usually necessary, and also because of the danger of glaucoma. In the infectious diseases of the eye, foreign protein therapy is valuable in the young but has little or no effect in the old. The so-called post-operative cataract delirium is often due to the injudicious use of sedative. In correcting refractive errors, young people are more comfortable if undercorrected but old people should be given full correction, although they sometimes have difficulty in adjusting themselves to the full correction of astigmatism.

The most difficult feature of the treat-

ment of infections in the aged is keeping up their morale and their desire to get well. It should also be pointed out that in the old the symptoms of disease may differ from those in the younger group. For instance, pneumonia without fever, appendicitis without pain, and so on; as Rolleston puts it—"the organs suffer in silence." The surgeons generally agree that operations are now done on elderly patients that probably would not have been attempted in years

past. This is chiefly because of the improvements in anesthesia and the more frequent use of local anesthesia and spinal anesthesia.

References

- Brunie, Leonard J: Geriatrics. Calif. and Western Med., 49:369, 1938.
Horn, W. S.: Geriatrics as a modern specialty. Texas State Jour. Med., 33:448, 1937.
Montgomery, F. R.: Age as a factor in surgical mortality. Mayo Clinic Bull., (March 24) 1937.
Pepper, O. H. P.: Notes in the field of geriatrics. Med. Clinics N. A., 20:127, 1936.
Pepper, O. H. P.: Ann. Surg., 101:296, 1935.
Rolleston: Diseases of old age. Practitioner, 115:4, 1925.

THE THYROID GLAND AND THE FUNCTION OF REPRODUCTION*

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It is almost common knowledge that an increase in the size of the thyroid gland, so-called simple or colloid goiter, may occur in the course of pregnancy and at the time of puberty, the menses and the menopause. In certain regions in which goiter is endemic, the increase in size of the gland has occurred with such consistent regularity in successive pregnancies that the term "stepladder" thyroid enlargement has been applied to it. Within comparatively recent years various observers have noted that change in function of the thyroid gland, namely hypothyroidism,[†] or diseases of the gland associated with hyperthyroidism, may be accompanied by disturbances of menstruation, decrease in fertility and abortion.

The object of this paper is (1) to review briefly those interrelated functions of the endocrine glands which appear to be concerned with reproduction, and particularly the relationship of physiologic processes of the thyroid gland to ovarian function and pregnancy, (2) to relate the effects produced by hypothyroidism on the reproductive function and their treatment, (3) to discuss diseases of the thyroid gland which are influenced by, or which may influence, the menstrual function and pregnancy, (4) to outline the treatment of colloid goiter, of adenomatous goiter with and without hyperthyroidism and of exophthalmic goiter complicating pregnancy, and (5) to show the results of treatment.

The activities of the endocrine glands known to be chiefly concerned with reproduction are interrelated. Among the several known secretions of the anterior lobe of the pituitary gland is the thyrotropic hormone, which sustains the function of the thyroid gland, and the gonadotropic or follicle-stim-

ulating and luteinizing hormones. Follicular fluid, or the estrogenic hormone, has, among its activities, an inhibitory effect on the anterior lobe of the pituitary gland. Both the estrogenic hormone and progesterone are concerned with the preparation of the endometrium and its exfoliation, the cycle of menstruation. The thyroid gland produces and delivers to the circulation a secretion, thyroxin, which controls the rate of consumption of oxygen by the cells of the body and, accordingly, the production of heat and energy by the body. In brief, sufficient experimental and clinical observations have been made to show that the function of reproduction is governed by the interdependent action of these three glands and probably a fourth pair, the suprarenal glands.

Evidence produced by Kuschinsky and others indicates that the secretion of the thyroid gland may, in a manner similar to estrin, control to some extent the activity of the anterior lobe of the pituitary gland. It has been supposed that secretion of the thyroid gland has no direct effect on the ovaries aside from control of oxidation. However, recent work by Fluhmann indicates that thyroid substance may inhibit the

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†The word hypothyroidism, as used in this paper, denotes a condition of low basal metabolic rate without myxedema.

effect of the gonad-stimulating hormone of the anterior lobe of the pituitary body and that this inhibition may be effected by direct action on the ovary rather than by indirect action through the pituitary gland.

During pregnancy the thyroid gland is stimulated to produce an increased amount of secretion. Various observers have estimated the accompanying increase in the rate of metabolism to be from 15 per cent to 25 per cent above normal. This increase in activity of the thyroid gland is not a condition of hyperthyroidism but indicates the response of the thyroid gland to the increased metabolic demands of maternal and fetal tissues. The curve of increased metabolism rises slowly to about the sixth month of pregnancy and then more abruptly. In fact, observations made by Hughes suggest that the rate of metabolism of many pregnant women remains below normal until after the fifth or sixth month of pregnancy.

Many women have a physiologically low rate of metabolism but in comparatively few instances is this associated with myxedema. Women with myxedema very rarely conceive. Those whose rate of metabolism is low, without myxedema, may have menstrual disturbances, may be relatively infertile or may have a tendency to abortion. Independently, Hughes and Bloss noted an increased incidence of physical abnormalities among babies born to mothers whose rates of metabolism were consistently below normal. Previously Williams had stated that dysfunction of the thyroid gland caused defective germ plasm and premature termination of pregnancy; if pregnancy continued, monstrosities occurred. Additional observations on this subject are highly desirable. Davis stated that low metabolic rates were not uncommon among women in the Milwaukee area and suggested that babies born to these women might in time suffer from thyroid deficiency if the mothers had not received medication with thyroid during pregnancy. Davis, among others, urged that medication with thyroid should be instituted prior to pregnancy in these cases, so that possible abortion or maldevelopment might be avoided. Litzenberg and Carey stated that a third of more than 130 women with low basal metabolic rates had menstrual difficulties. These and other physicians were frequently able to carry out successful treatment of habitual abortion by

giving thyroid extract to pregnant women with low basal metabolic rates. Treating patients having low basal metabolic rates without myxedema by means of desiccated thyroid only, Haines and I reported definite improvement of menstrual flow in 72 per cent of cases of "functional" amenorrhea, in 55 per cent of cases of oligomenorrhea and in 73 per cent of cases of menorrhagia. Many authors have reported successful treatment with similar medication of certain sterile women who also were in a condition of hypothyroidism. Nausea and vomiting of pregnancy are said by some observers to be more common among patients whose metabolic rates are low than among those whose rates are normal; others, including Davis and Falls, have noted that this condition usually is associated with a hyperactive condition of the thyroid gland. Observations at The Mayo Clinic indicate that either low or high rates of metabolism occasionally may be associated with hyperemesis.

The state of low basal rate unassociated with myxedema is not necessarily productive of symptoms. In fact, metabolic rates below the usual normal level are not uncommon and frequently are found in examination of several members of the same family. When the hypothyroid patient has symptoms of intolerance to cold, physical fatigue, and so forth, and especially if the individual gives a history of unexplainable infertility, spontaneous abortion or disturbances in the amount or regularity of the menses, the rate of metabolism may be elevated carefully by oral administration of thyroid substance. A successful procedure is administration of a standard product of desiccated thyroid in doses of 4 grains (0.24 gm.) daily for three or four days and then administration of 1 to 2 grains (0.065 to 0.12 gm.) daily. The dosage usually is regulated within two or three weeks by determinations of basal metabolic rate every five to seven days. Most patients with low rates of metabolism seem to feel best when the rate is elevated to about —5 or —8 per cent. After the rate has been stabilized, the dose usually may be continued indefinitely, although it is well to determine the rate at intervals of weeks or months.

As a preface to the discussion of diseases of the thyroid gland which may complicate pregnancy, I shall digress to review briefly

certain generally accepted hypotheses concerning physiologic function of the thyroid gland. I have stated previously that the thyrotropic hormone sustains the normal function of the thyroid gland, which is the production of thyroxin. However, sufficient thyroxin cannot be formed in a thyroid gland which lacks an adequate supply of iodine. When the supply of iodine is insufficient for the needs of the thyroid gland, work hypertrophy or hyperplasia occurs, the secretory processes are altered, colloid substance low in content of iodine is stored in excess of normal, and diffuse colloid goiter is the result. Colloid goiter, then, is not an indication of lowered function of the thyroid gland, but occurs when a functioning gland is not supplied with sufficient iodine to enable it to convert into thyroxin all of the secretion it has been stimulated to produce.

Iodine is found in sea water, in most ground water and in certain leafy vegetables, and the incidence of colloid goiter in a given region depends to a large extent on the amount of available iodine in the drinking water and vegetables. When the supply of iodine is particularly low, as in certain mountainous districts in Switzerland, a majority of the population will have colloid goiter. When the deficiency is not so marked, as in our Great Lakes region, the amount of ingested iodine may be adequate to supply the thyroid gland under ordinary conditions, but quite inadequate for the physiologic increase of metabolism which occurs at puberty, during pregnancy and sometimes during the menses and at the menopause. Under such conditions, and especially during pregnancy, colloid or simple goiter is prone to develop. These goiters may or may not subside following confinement, depending on adequacy of the supply of iodine. When this remains low the deposit of colloid does not subside, but, instead, increases in subsequent pregnancies.

The presence of colloid goiter indicates an inadequate supply of iodine but it is not an indication of a deficiency of the secretion of the thyroid gland. In cases of colloid goiter the production of thyroxin may or may not be adequate to maintain normal metabolism. When colloid goiter has been endemic for several generations, as it has been in certain regions of Switzerland, the thyroid gland loses its ability to func-

tion adequately and many persons who have colloid goiter or adenomatous goiter are also in a state of hypothyroidism.

The relation between colloid goiter and supply of iodine is a definite concern of the physician who is caring for pregnant women. If a woman has colloid goiter and the thyroid gland delivers to the general circulation an adequate amount of thyroxin, colloid goiter will not develop in the fetus providing there is sufficient iodine to supply the demand of its normally functioning thyroid gland. If the mother is in a state of hypothyroidism and has colloid goiter, the fetus is prone to develop disturbance of the thyroid, its gravity depending on the degree of maternal hypothyroidism and the inadequacy of the supply of iodine. Fetal thyroid disease may vary, under different conditions, from colloid goiter with adequate glandular function to the total lack of development and function of the thyroid that is found in the total cretin. Colloid goiter needs no treatment during pregnancy except administration of iodine. In regions where goiter is endemic, iodine may be supplied in the form of iodized salt which, according to Marine, should be in the proportion of 1 part of potassium iodide to 100,000 parts of sodium chloride. For adults, Means advised 1 drop of compound solution of iodine (Lugol's solution) per week.

In many cases of colloid goiter there appears in the thyroid gland adenomatous tissue, probably as a result of the sustained stimulation of the gland, together with unknown factors. Adenomas are not common in the newly formed colloid goiter, the goiter of adolescence, but they occur in increasing frequency among persons with colloid goiter as they grow older. In many large colloid goiters adenomas may be present in the gland but may be unnoticeable or difficult to detect. Observations indicate that preparations of iodine in other than minimal doses may cause the development of hyperthyroidism in cases of adenomatous goiter. Therefore, care must be exercised in administration of preparations of iodine to pregnant women who have large colloid goiters, especially when adenomas are known to be present.

Adenomatous nodules may be present in thyroid glands from which the excess of colloid has been absorbed. These adenomatous nodules are likely to remain quiescent

for years, but there is a tendency, on the average, fourteen years after the tumors first have been observed, for these nodules to be stimulated to produce an excessive amount of thyroxin, even though the remaining portion of the gland remains normal. There is about an even chance that this may occur in the course of pregnancy or that the woman may become pregnant when the adenomas are already hyperfunctioning. The course of hyperthyroidism associated with adenomatous goiter is usually progressively worse and, as might be expected, considerably more than half of all these patients became worse in the progress of pregnancy. Also, in some cases of large, multiple adenomas without hyperthyroidism, a hazard occurs owing to the pressure of substernal masses on the trachea. Because of the conditions mentioned above, and because the benefits of iodine in treatment of this condition are questionable, nearly all patients who have hyperfunctioning adenomas, and some of those who have large adenomas without hyperthyroidism, are advised to have the adenomas removed, unless pregnancy has progressed to within the last six weeks. Even in the last six weeks of pregnancy, in the presence of a metabolic rate of more than 50 per cent, which has been maintained for a considerable period, or in the presence of myocardial insufficiency or of dyspnea caused by pressure of the adenoma on the trachea, removal of the adenomas prior to delivery of the baby usually is the safest procedure.

The influence of pregnancy on the course of hyperthyroidism, and, conversely, the possible harmful effect of hyperthyroidism on the mother and fetus, have been subjects of considerable comment. In one series of cases, the symptoms of less than a third of all the patients who had exophthalmic goiter became worse in the course of pregnancy. It will be recalled that the course of exophthalmic goiter is subject to considerable fluctuation and that it is difficult to determine how much the course of these cases was influenced by pregnancy. Recently, experimental work by Bodansky and Duff, and by Danforth and Loumos, working independently, revealed that pregnant rats tolerated doses of thyroid extract which caused rapid loss of weight and death of nonpregnant controls. These findings suggest that pregnant women tolerate hy-

perthyroidism better than nonpregnant women. Few of these patients observed at The Mayo Clinic gave evidence of spontaneous improvement in the course of pregnancy; at least these experimental findings seem to coincide with the clinical observation of W. A. Plummer, Boothby and me that pregnancy did not render the control of exophthalmic goiter of increased difficulty.

Hyperthyroidism during pregnancy carries an increased fetal hazard which seems to be proportionate to the degree of hyperthyroidism. When the rate of metabolism rises unduly and the patient becomes seriously sick, abortions are more prone to occur. Among adequately treated patients whose hyperthyroidism is not too severe, the fetal risk is not appreciably greater than in the average pregnancy. Wallace and Bothe agreed with W. A. Plummer, Boothby and me when we stated that hyperthyroidism is practically never an indication for therapeutic abortion. Abortion does not cure hyperthyroidism. In mild cases interruption of pregnancy is unnecessary and in severe cases the probability of a thyroid crisis or subsequent infection following operative abortion outweighs any hypothetical benefit which might be derived from terminating pregnancy.

I have stated previously that hyperthyroidism resulting from adenomatous goiter is rarely controlled satisfactorily by administration of iodine and that the safest procedure is to remove the adenomatous tissue. On the contrary, the hyperthyroidism of exophthalmic goiter is partially controlled, at least temporarily, by administration of iodine. In mild cases in which the hyperthyroidism is not well controlled, and in severe cases following temporary control, subtotal thyroidectomy is indicated.

The oral administration of compound solution of iodine in doses of 10 drops three times a day to pregnant women with exophthalmic goiter is ordinarily followed by distinct improvement and by a definitely lowered basal metabolic rate within two weeks. In some of the mild cases of exophthalmic goiter, especially those of recurring hyperthyroidism, within two weeks after commencing the use of iodine, a complete or nearly complete remission may follow. In such cases of rapid and marked remission the patient may be carried through pregnancy by medication with iodine. It is neces-

THE THYROID GLAND AND REPRODUCTION—MUSSEY

TABLE I. RESULTS OF TREATMENT: PREGNANCY AND HYPERTHYROIDISM

Treatment	Adenomatous goiter with hyperthyroidism 23 cases				Exophthalmic goiter 43 cases			
	Condition unknown	Cured or improved	Died	Total	Condition unknown	Cured or improved	Died	Total
Medical management		1	0	1				
Medication with iodine						11		11
Iodine and thyroidectomy† during pregnancy						27		27
Iodine during and thyroidectomy after pregnancy						2	1*	3
Thyroidectomy during pregnancy		19	0	19		2		2
Thyroidectomy after pregnancy		1	0	1				
Operation declined	2							
Total	2	21	0	23		42	1	43

*Case of spontaneous abortion, followed by iodine preparation and partial thyroidectomy; bronchopneumonia; died fifth day.

†Subtotal or partial thyroidectomy.

sary to observe these patients carefully and to take the metabolic rates occasionally as a flare-up of the disease often occurs in spite of the continued use of iodine. Except in selected cases in the last trimester of pregnancy, partial thyroidectomy should be performed if the exophthalmic goiter does not give evidence of complete or nearly complete remission within two weeks after treatment with iodine has been begun. The initial and often dramatic improvement may produce a false sense of security and lead to deferring operation to a less favorable period of pregnancy or to a time when iodine may fail to give as complete protection against postoperative reaction or irreparable damage to vital organs. There may be exceptions to this rule when other diseases complicate pregnancy.

The Results of Treatment

Ninety-three* cases of hyperthyroidism complicating pregnancy were observed at The Mayo Clinic from January 1, 1916, to December 31, 1937, inclusive; this number includes sixty-eight cases previously reported to have been encountered up to January 1, 1930, and twenty-five cases observed since then and not reported before. In 1923

H. S. Plummer added oral administration of iodine to the methods of treatment of exophthalmic goiter. Because the use of iodine in the treatment of exophthalmic goiter has made the management of this condition infinitely easier and safer, the twenty-seven cases of hyperthyroidism complicating pregnancy observed at the clinic prior to 1923 are not included in the present discussion of the results of treatment. This discussion, then, includes the results of treatment among sixty-six pregnant women with hyperthyroidism observed from January 1, 1923, up to January 1, 1938 (Table I); among these were forty-three cases with exophthalmic goiter and twenty-three cases with hyperfunctioning or "toxic" adenomas.

The outcome of pregnancy of fifty-seven of the sixty-six patients is known (Table II). Including two sets of twins, fifty-four living babies were born to fifty-seven women; two deaths were reported to have occurred among several prematurely born living infants, one following an operation for pyloric stenosis and one from a blood dyscrasia. There were two stillbirths, one after delivery by forceps and one following maternal influenza. Three abortions occurred; two abortions were spontaneous; in each the patient was seriously ill with exophthalmic goiter. In one case of hyperfunctioning adenomatous goiter a therapeutic abortion

*The eighty-three cases of hyperthyroidism reported in a recently submitted review did not include those observed in 1937.

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TABLE II. OUTCOME OF PREGNANCY: 23 CASES OF ADENOMATOUS GOITER WITH HYPERTHYROIDISM; 43 CASES OF EXOPHTHALMIC GOITER*

Result	Pregnancies
Unknown	9
Abortions spontaneous	2
Abortions therapeutic	1
Child or children born alive and lived	52†
Child born alive and died	2
Stillbirths	2
Total	68

*Does not include cases of hyperthyroidism observed prior to 1923.

†Includes 2 pregnancies which resulted in birth of twins.

was performed because of a large diaphragmatic hernia complicated by severe anemia.

Partial thyroidectomy was performed in the course of pregnancy in nineteen of twenty-three cases of adenomatous goiter with hyperthyroidism; this operation was performed in one such case following therapeutic abortion; two patients declined operation and one patient was carried through pregnancy on medical management. In twenty-nine of the forty-three cases of exophthalmic goiter partial thyroidectomy was performed in the course of pregnancy. Operation on all but two of these patients followed administration of iodine; these two patients were treated before iodine was used as a routine in the treatment of exophthalmic goiter. In fourteen cases of exophthalmic goiter, in four of which the condition had recurred, treatment with iodine was given in the course of pregnancy. In eleven of these fourteen cases mild symptoms appeared to be controlled by iodine after delivery. In three cases it was necessary to perform partial thyroidectomy after termination of pregnancy; one of these patients died. While a hyperthyroid crisis was in progress, she miscarried after a pregnancy of twelve weeks. After adequate preoperative administration of compound solution of iodine, partial thyroidectomy was performed; the patient died of bronchopneumonia on the fifth postoperative day. There were no other deaths among the ninety-three pregnant women with hyperthyroidism who were observed at The Mayo Clinic

from January 1, 1916, up to January 1, 1938.

Comment

The function of reproduction is governed by the interdependent action of the ovaries, the pituitary body, the thyroid gland and, probably, the suprarenal glands.

Functional as well as pathologic changes in the thyroid gland may be accompanied by disturbances of menstruation, relative infertility, abortion, and, perhaps, maldevelopment of the fetus.

A majority of women who have low basal metabolic rates without myxedema, accompanied by disturbances in the function of reproduction, are benefited by careful oral administration of desiccated thyroid.

Colloid goiter occurs when a functioning thyroid gland is not supplied with sufficient iodine to enable it to convert into thyroxine all of the secretion it has been stimulated to produce. In regions where the supply of iodine is low, it is advisable to administer iodine to girls and women during periods of increased physiologic activity of the thyroid, such as occur during puberty and pregnancy, in order to prevent the development of colloid goiter.

Occasionally women with hyperthyroidism may become pregnant, or hyperthyroid conditions may develop among pregnant women. Among the ninety-three cases of hyperthyroidism complicating pregnancy there were few in which pregnancy seemed to be a factor responsible for the development of the hyperthyroid state. Both the maternal and fetal risk depend on the degree of hyperthyroidism. Prompt treatment of the hyperthyroid condition is indicated, rather than interruption of pregnancy. The treatment of pregnant women with exophthalmic goiter or with hyperfunctioning adenomas, with rare exceptions, does not differ from treatment of nonpregnant women.

References

1. Bloss, J. R.: The importance of routine thyroid study in prenatal care. *South. Med. Jour.*, 30:637-639, (June) 1937.
2. Bodansky, M., and Duff, Virginia B.: The influence of pregnancy on resistance to thyroxine, with data on the creatine content of the maternal and fetal myocardium. *Endocrinology*, 20:537-540, (July) 1936.
3. Bothe, F. A.: Hyperthyroidism associated with pregnancy. *Ann. Surg.*, 101:422-428, (Jan.) 1935.
4. Danforth, D. N., and Loumos, S.: Effect of administration of desiccated thyroid during pregnancy in the albino rat. *Proc. Soc. Exper. Biol. and Med.*, 34:870-872, (June) 1936.
5. Davis, C. H.: Hypothyroidism as a problem in women; a basal metabolism study of 600 cases. *Am. Jour. Obst. and Gynec.*, 30:570-576, (Oct.) 1935.

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6. Falls, F. H.: Hyperthyroidism complicating pregnancy. *Northwest Med.*, 28:391-395, (Sept.) 1929.
7. Fluhmann, C. F.: The influence of the thyroid on the action of gonad-stimulating hormones. *Am. Jour. Physiol.*, 108:498-508, (May) 1934.
8. Haines, S. F., and Mussey, R. D.: Certain menstrual disturbances associated with low basal metabolic rates without myxedema. *Jour. A.M.A.*, 105:557-559, (Aug. 24) 1935.
9. Hughes, E. C.: A study of 1,250 basal metabolisms during pregnancy: clinical presentation of cases. *New York State Jour. Med.*, 34:873-880, (Oct. 15) 1934.
10. Kuschinsky, G.: Quoted by Means, J. H.
11. Litzenberg, J. C., and Carey, J. B.: The relation of basal metabolism to gestation. *Am. Jour. Obst. and Gynec.*, 17:550-552, (April) 1929.
12. Marine, David: The physiology and principal inter-relations of the thyroid. *Jour. Am. Med. Assn.*, 104: 2250-2255, (June 22) 1935.
13. Means, J. H.: *The Thyroid and Its Diseases*. Philadelphia: J. P. Lippincott Company, 1937. 602 pp.
14. Mussey, R. D.: The thyroid gland and pregnancy. (In press.)
15. Mussey, R. D., and Plummer, W. A.: Treatment of goiter complicating pregnancy. *Jour. A.M.A.*, 97:602-604, (Aug. 29) 1931.
16. Mussey, R. D., Plummer, W. A., and Boothby, W. M.: Pregnancy complicating exophthalmic goiter. *Jour. A.M.A.*, 87:1009-1011, (Sept. 25) 1926.
17. Plummer, H. S.: Quoted by Mussey, R. D., Plummer, W. A., and Boothby, W. M.
18. Wallace, J. T.: Thyrotoxicosis in its relation to pregnancy. *Am. Jour. Obst. and Gynec.*, 26:77-83, (July) 1933.
19. Williams, J. W.: *Obstetrics*. Ed. 6, New York: D. Appleton and Co., 1930. 1157 pp.

A CASE OF HERPES ZOSTER OPHTHALMICUS

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Herpes zoster ophthalmicus is a disease involving the skin over the distribution of the first division of the trigeminal nerve. This disease is thought to be caused by a filterable virus. Hemorrhages and cellular exudates have been found in the sensory ganglia, and it is reported that the infection extends along the sensory nerves to the skin.

The onset of the disease is characterized by severe neuralgic pain over the affected area, followed in two or three days by the appearance of deep-seated vesicles on an erythematous base. The vesicles follow the skin distribution of the ophthalmic nerve, and the area involved usually does not spread. The vesicles contain a clear fluid, which later becomes turbid. They rupture and a brown crusting follows. When the crusts fall off, a permanent scar formation is seen. The course of the disease is usually three to six weeks. Neuralgic pains, anesthesia and paresthesias may persist for many months after the apparent healing of the herpes.

Complications of the disease occur in about 50 per cent of the cases. These complications are keratitis, scleritis, iridocyclitis, ocular palsies, and optic neuritis. True conjunctival lesions are rare, but, when seen, are usually located on the tarsus.

An idea of the efficacy of therapy can be gained from the array of cures that have been tried. These include: autohemotherapy, high-frequency current, deep x-ray radiation, ultra violet radiation, sodium iodide, arsphenamine, pituitrin, histamine, sulphanilimide, and vitamin B-1. Gifford, in his "Ocular Therapeutics," states: "In herpes zoster affecting the lids, the local lesions are practically unaffected by treatment, and can only be protected from secondary infection by a zinc oxide ointment or the calomine-zinc-oxide lotion." He feels that 0.5 to 1 c.c. of pituitrin, given once or

twice at forty-eight-hour intervals, gives relief of pain in many cases.

J. R. and B. F. Walker in the *Archives of Ophthalmology*, August, 1938, reported diphtheria antitoxin as being specific against herpes zoster. They have been employing it exclusively for the past twenty years. Five or ten thousand units were ordinarily given by the intramuscular route. Rarely, a third dose of 5,000 units was necessary. They report marked success, especially in intractable cases, where pain had persisted for several months. It was this article that prompted its trial on the following case:

Mrs. S. R., a white woman, aged fifty-six, was first seen in our clinic, November 28, 1938. She complained of severe pain in and about the left eye, associated with swelling of the lids, redness and blister formation. The present condition had started three days previously, with severe neuralgic pain over the left side of her head and forehead. The following morning she noticed a redness and swelling of her left eyelids, and frontal region. The shooting pains persisted, and the day before admission, blisters appeared.

Examination revealed redness, edema and vesicle formation over the left side of the forehead, extending up into the scalp, and also involving the eyelids and the dorsum of the nose. The picture was typical of an acute herpes zoster. There were many small active vesicles, as well as larger and coalescing groups. There was considerable photophobia and lacrimation of the left eye, which had

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to be opened manually due to the edema. Retraction of the lids revealed injection of the conjunctival and episcleral vessels. There was a small corneal lesion about 3 mm. from the limbus superiorly, which was stained with fluorescein. The patient was admitted to the hospital November 28, 1938, and given 5,000 units of diphtheria antitoxin after a preliminary skin test for sensitivity with horse serum. No other therapy, ether local or systemic, was given. Twenty-four hours after receiving the antitoxin, there had been a marked diminution in pain, the tearing and photophobia had lessened, the cornea did not stain, and there were no new herpetic lesions.

In forty-eight hours, the herpetic lesions were healing rapidly, the edema of the lids and frontal region had almost entirely disappeared, and the patient could open her eye easily. Because of the fact that her neuralgic pains had not entirely disappeared, a second dose of 5,000 units of antitoxin was given, on November 30, 1938. During the succeeding three days of hospital stay, a gradual and progressive improvement was noted both objectively and symptomatically. She was discharged (on

December 3, 1938) with a prescription for calomine ointment to be applied to the healing herpetic lesions, morning and night.

She has been seen subsequently on weekly visits to the "Out-Patient Department." Her complaints have been limited to itching of the herpetic areas, and a feeling of numbness in the areas involved. At the present time there are a few superficial scars over the frontal region and the patient still has a feeling of numbness over this area.

Conclusion

A case of herpes zoster ophthalmicus was presented, which responded favorably to two 5,000 units intramuscular doses of diphtheria antitoxin. Obviously, no conclusions can be drawn from a single case. We feel that this treatment deserves further trial.

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SULFANILAMIDE*

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The introduction of prontosil by Domagk⁶¹ in 1935 ushered in a new era of chemotherapeutics. Its low solubility was a disadvantage which led to the synthesis of a derivative, neo-prontosil,† which could be given parenterally. It was soon discovered that both preparations were inert against hemolytic streptococci *in vitro* and that their effect *in vivo* was probably due chiefly to breakdown within the body to para-amino-benzene-sulfonamide.^{19, 43, 71, 157, 199} This drug, which has been Council-accepted under the name of sulfanilamide, has largely superseded prontosil because it is cheaper, easier to administer and more effective against most organisms. This review will, therefore, be devoted principally to sulfanilamide.

Absorption and Excretion

Sulfanilamide is almost completely absorbed from the gastro-intestinal tract of the dog within four hours¹⁴² and may then be recovered from the liver, spleen, lung, heart and skeletal muscle in concentrations equal to that in the blood.¹⁴⁴ The sulfanilamide level in skin and brain is slightly lower than that in the blood, whereas the level attained in bone and fat is only 25 to 50 per cent of that in the blood. In man, absorption and diffusion are equally prompt, as shown by the rapid rise in blood sulfanilamide and parallel changes in the spinal fluid level.¹⁴⁴ Sulfanilamide passes through the placenta readily and attains the same concentration in fetal blood as in maternal.^{15, 119, 188} Sulfanilamide is excreted almost

entirely through the kidneys.^{131, 143, 190} In hot weather, however, appreciable amounts may be diverted into the sweat.⁹³ It is excreted into breast milk in quantities too small to produce toxic symptoms in the average nursing infant.^{1, 189} The loss in the feces is negligible, even in diarrhea.¹⁹⁰ Sulfanilamide appears in the urine partly in the free state, and partly as an acetylated derivative, the proportion of the latter ranging from less than 10 per cent to more than 90 per cent of the total.¹³¹ This is significant in the treatment of urinary tract infections because the acetylated form is much less effective than free sulfanilamide. The rate of excretion depends upon the renal function and the fluid intake. In renal insufficiency, the drug may be retained and poisoning may result from doses that are ordinarily non-toxic. In normals, 50 to 75 per cent of a single massive dose is excreted in twenty-four hours; 90 per cent in forty-eight hours. When fluids are forced, the

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†Also known as prontosil soluble, prontosil solution.

drug is excreted more rapidly, making it difficult to maintain the blood sulfanilamide at the desired level. When fluids are withheld, the drug may be concentrated up to a point at which it precipitates in the urine, forming a nidus for a possible calculus.¹⁹⁰ A moderate fluid intake adjusted to provide a twenty-hour urine output of about one liter is indicated during sulfanilamide administration.

Mode of Action

After the addition of sulfanilamide to cultures of beta hemolytic streptococci in blood serum, the following effects have been demonstrated:^{21a, 75, 121, 208} (1) change in the staining reactions,⁷⁵ the microorganisms becoming pleomorphic and metachromatic; (2) interference with bacterial utilization of serum protein;¹²¹ (3) inhibition of bacterial multiplication;^{21a} (4) sterilization of the culture, provided that the inoculum was light,¹²¹ or that the incubation was carried out at elevated temperatures. White and Parker²⁰⁸ showed that sulfanilamide, added to cultures of B hemolytic streptococci in blood or peptone dextrose broth to make a concentration of 20 mg. per cent, was bactericidal when incubated at 104°F but merely bacteriostatic at temperatures of 98°-102°F. The action of sulfanilamide *in vitro* was not evident for at least three hours but became fully developed in approximately thirty hours. The effects of the drug *in vivo* are even more striking than in the test tube. A definite bacteriostatic and bactericidal action is also demonstrable *in vivo* but probably does not fully account for the remarkable therapeutic effects of the drug. The superior results *in vivo* may be due to the presence of phagocytes. In experimental B hemolytic streptococcal infections, phagocytosis is more pronounced in the animals treated with sulfanilamide than in untreated controls.^{21a} The phagocytosis occurring under sulfanilamide therapy is due to a direct effect upon the microorganism—not to increased production of leukocytes⁷⁵ nor to chemotaxis.⁴⁷ Lyons¹³² has shown that streptococci grown in media containing sulfanilamide become susceptible to phagocytosis and agglutination but regain their virulence if transplanted back to a medium free of the drug. Thus, the chief effect of sulfanilamide is to alter microorganisms in such a way that multiplication is retarded or

checked and susceptibility to bodily defense mechanisms is increased. Sulfanilamide is apparently inert against bacterial toxins^{38, 79, 162} with the possible exception of that derived from the gonococcus.³⁸

Method of Administration and Dosage

A.. *Oral*—the preferable route of administration. The dosage is dependent upon the severity of the infection. The following dosage scale has been in use at Detroit Receiving Hospital for one and one-half years:

1. *Large doses* are indicated when the patient is critically ill with an infection amenable to sulfanilamide, and are given to establish a blood sulfanilamide level of 10 to 15 mg. per cent. When large doses are employed, close observation for toxic symptoms and signs and daily hemoglobin estimations and white counts are obligatory. It is wise to be prepared to do a blood transfusion in the event of acute hemolytic anemia. The plan of treatment is as follows: An initial dose of 15 grains per 20 pounds body weight is given at once, patients over 160 pounds receiving the maximum dose of 120 grains. A similar total (15 grains per 20 pounds) is given during the next twenty-four hours, divided into six equal doses, the first given four hours after the initial massive dose, the remainder at intervals of four hours around the clock. The blood sulfanilamide level is checked daily. If it is between 10 and 15 mg. per cent, a total of 15 grains per 20 pounds, divided into six equal doses, is given during each subsequent twenty-four hour period until definite improvement occurs. The dose is cut in half after the temperature has been normal for twenty-four hours. If blood levels are maintained between 10 and 15 mg. per cent for five to seven days without definite clinical response, the case is classed as a therapeutic failure and the drug is stopped.* If the blood concentration is below 7 mg. per cent, rapid elimination or defective absorption is suspected and either the fluid intake is reduced, the dose increased or the subcutaneous route substituted. In children, an initial dose of one grain per pound body weight, followed by a similar amount every

*Larger doses sufficient to establish a blood level of 20 to 30 mg. per cent are being tried experimentally in pneumococcal meningitis and in bacterial endocarditis but are not recommended for routine use because of the danger of serious toxic manifestations.

twenty-four hours, divided into six equal doses, is necessary to establish adequate blood levels.

2. *Moderate doses* are indicated in patients bedridden but not critically ill with infections amenable to sulfanilamide. These doses should maintain a blood sulfanilamide level of 5 to 6 mg. per cent, which is sufficient in the less virulent infections. The risk of severe toxic manifestations is less than with full doses but close clinical observation is necessary and frequent blood counts are advisable. A total of 10 grains per 20 pounds body weight is given during each twenty-four-hour period until improvement occurs. The twenty-four-hour total is divided into five equal doses, which may be given at 8:00 A. M., noon, 4:00 P. M., 8:00 P. M., and midnight. As soon as definite clinical improvement occurs, the dose should be reduced. If no improvement is detectable within two days in an infection which should respond to sulfanilamide, the dose should be increased sufficiently to raise the blood level above 10 mg. per cent for another three to five days before abandoning the drug.

3. *Small doses* not to exceed 10 grains four times daily are advisable, if ambulatory patients be treated. The unpleasant side effects of the drug (headache, dizziness, lassitude, nausea, et cetera) are more pronounced in ambulatory than in bedridden cases.

B. *Subcutaneous* route is indicated when the patient is too ill to take or retain oral medication. The powdered drug may be purchased in sterile ampules to be added to sterile saline or to one-sixth molar sodium lactate solution in the proportion of 1 gram to 100 cc.c, warmed until completely dissolved and then injected subcutaneously at body temperature. Sodium lactate solution is the preferable vehicle since it combats acidosis. The initial dose is 100 c.c. per 20 pounds body weight with a maximum of 800 c.c.; subsequent doses of 40 c.c. per 20 pounds (maximum of 300 c.c.) are given every eight hours. Control of dosage by blood sulfanilamide determinations is highly desirable. Oral sulfanilamide should be substituted as soon as possible. The drug need not be given intravenously, since absorption

is so rapid and complete from the gastro-intestinal tract and from the subcutaneous tissue.

C. *Intraspinal* administration may be used to supplement oral sulfanilamide in meningitis. Spinal punctures may be done every twelve hours, the fluid slowly removed until the pressure reaches normal, then 0.8 to 1 per cent sulfanilamide solution may be introduced by gravity, giving 5 to 10 c.c. less than the quantity removed. Intrathecal injection is not obligatory in meningitis, since satisfactory concentrations of the drug in the spinal fluid may be attained through the oral or subcutaneous routes.

D. *Intrapleural—Intraperitoneal—Intra-articular*.—When purulent fluid containing organisms susceptible to sulfanilamide is removed from the pleural, peritoneal or synovial cavities, it may be partially replaced by 0.8 to 1 per cent sulfanilamide solution.

Other Medication

Accessory medication.—Sodium bicarbonate should be given along with sulfanilamide to prevent acidosis. Thirty to sixty grains of the alkali with the initial massive dose of sulfanilamide and 10 to 20 grains with each subsequent dose will usually suffice. Parenteral saline and glucose should be given when indicated but should not be deliberately forced because of the difficulty in maintaining adequate blood sulfanilamide levels. Blood transfusions should be given as often as needed. Specific sera should be used when available, since the combination of serum and drug is more effective than either alone.

Infections in Which Sulfanilamide Is of Proven Value

Beta hemolytic streptococcus.—Sulfanilamide seems of greatest value in rapidly-spreading infections, such as cellulitis and lymphangitis, where there is little tissue destruction.¹²² The superiority of chemotherapy is particularly notable in beta hemolytic streptococcal infections complicated by bacteremia. Mortality rates of 70 to 75 per cent occurred under the most skillful management prior to the introduction of sulfanilamide.^{110, 130} Keefer¹¹⁰ has collected fifty cases treated with sulfanilamide or its derivatives with 32 per cent deaths. With large

doses sufficient to keep the blood level between 10 and 15 mg. per cent, better results might be expected. Sulfanilamide may prevent the spread of streptococcal abscesses but seldom sterilizes them, surgical drainage being necessary for cure. The vulnerability of the organism in the blood stream and the resistance in an abscess cavity may be partly explained by Lockwood's observation¹²¹ that the beta hemolytic streptococcus in the presence of sulfanilamide is unable to utilize serum protein, but will multiply on peptone and other products of protein disintegration found in abscesses. *Meningitis.*—Additional striking clinical evidence of the efficacy of sulfanilamide against the beta hemolytic streptococcus lies in the results in meningitis due to that organism, a disease which formerly ended fatally in over 95 per cent of the cases. Schwentker¹⁷⁸ reported a mortality rate of 17.3 per cent among twenty-three cases treated in Baltimore, whereas Neal¹⁵³ has treated twenty-six cases with only 19.2 per cent deaths. More recoveries have been reported since the introduction of sulfanilamide than in all the preceding years. No doubt many recoveries are unrecorded, as, for example, the two which we have had at Receiving Hospital. *Erysipelas.*—Snodgrass and Anderson¹⁸⁶ compared the results in 135 cases of erysipelas treated with sulfanilamide with the results in a similar number of controls treated with ultraviolet light. The spread of the lesion was checked within twenty-four hours in 97 per cent of the former and 59 per cent of the latter whereas defervescence occurred within forty-eight hours in 75 and 47 per cent respectively. Toomey¹⁹⁴ reported a mortality rate of 4 per cent in infantile erysipelas treated with sulfanilamide, as compared with 13 per cent in the cases receiving antitoxin and 15.5 per cent in the controls. Many others have confirmed the reduction in mortality rate from erysipelas at the extremes of life and the shortening of the course of the disease in all age groups. *Puerperal infections.*—Colebrook and Purdie⁴⁴ reported a death rate of 8 per cent in 106 cases treated with sulfanilamide as compared with a mortality of 22.8 per cent in a previous series, treated in other ways. Their results with prontosil in a smaller series of cases were even better. Several oth-

ers have obtained excellent results with sulfanilamide in puerperal sepsis.^{27, 69, 76}

Miscellaneous.—Good responses to chemotherapy have been reported in a variety of beta hemolytic streptococcal infections^{22, 28, 31, 68, 73, 78, 82, 83, 102, 113, 114, 125, 136} including otitis media, cellulitis, pneumonia, empyema, brain abscess, endocarditis, pericarditis, peritonitis, arthritis, osteomyelitis, et cetera. But the number of cases is too small to be of statistical significance. In certain other infections due to beta hemolytic streptococcus the response is not so dramatic. Included in this category are tonsillitis, scarlet fever, and pyelonephritis. While good results have been reported in beta hemolytic streptococcal tonsillitis,¹⁸⁵ a disease which usually responds to symptomatic therapy, it is noteworthy that the drug often fails to eradicate the organism from tonsillar foci. Longcope¹⁸⁰ administered the drug to twelve patients with tonsillar foci for six to twenty-five days preoperatively in doses sufficient to produce blood levels of 7 to 19 mg. per cent, yet obtained a heavy growth of *B. hemolytic streptococci* from the excised tonsils of six cases. Hoyne and Bailey⁹⁹ failed to produce negative throat cultures in 79 per cent of 125 convalescents from scarlet fever who took 30 grains daily for one week. Sulfanilamide has no effect on the fever, toxemia or rash in moderately severe scarlet fever,^{97, 175, 206} an apparent paradox which may be explained by the fact that these symptoms are probably due to an exotoxin. However, it probably reduces the incidence of suppurative complications,¹⁷⁵ and lowers the mortality in the severe cases with bacteremia.²⁰⁶ Sulfanilamide may fail completely in *B. hemolytic streptococcal pyelonephritis*.²¹ The most common strain to invade the urinary tract is streptococcus fecalis, which belongs to Lancefield group D and thus differs from the Lancefield A strain of hemolytic streptococcus responsible for most other human infections. *In vitro*, as well as *in vivo*, sulfanilamide is inactive against beta hemolytic streptococci of group D but effective against group A.

Meningococcus infections. Meningitis.—The excellent results obtained in experimental meningococcic infections in laboratory animals have been confirmed clinically. Among fifty-two cases of meningococcic

meningitis treated with sulfanilamide, Schwentker¹⁷⁸ lost only 15 per cent, whereas among a similar number of cases treated with serum there were 30 per cent deaths. Muraz¹⁶¹ reported a mortality rate of 10.7 per cent in 271 cases of epidemic meningitis treated with sulfanilamide as compared to a rate of 22.4 per cent in forty-nine cases treated with serum and 8.7 per cent in twenty-three cases under combined therapy. Waghelstein²⁰² reported mortality rates of 15.3 per cent in seventy-two cases receiving chemotherapy, 26.9 per cent in 368 cases treated with serum and 23.5 per cent in thirty-four cases under combined therapy. These reports, together with several others covering smaller series of cases,^{9, 62, 106, 209} have established a definite place for sulfanilamide in the treatment of meningococcic meningitis. Large doses of the drug are indicated. However, the best results will probably be obtained by using it in conjunction with serum.

Gonococcus infections. Gonorrhea.—The excellent results originally reported by Dees and Colston⁵⁶ have been repeatedly confirmed. Twelve series of 100 or more cases have been published to date.^{2, 5, 11, 30, 33, 42, 50, 100, 133, 138, 160, 171, 184, 201} "Clinical cures" were obtained in 75 per cent or more of the cases in each series. The criteria of cure were variable, but generally included complete symptomatic relief, disappearance of gonococci from smears and absence of relapse following provocative measures. Most of those who obtained good results administered 60 to 90 grains daily for one to seven days followed by 30 to 40 grains daily for a total period of two to three weeks. In many instances, sulfanilamide was supplemented by local therapy or vaccine. The drug is effective in both acute and chronic gonorrhea. The results, however, are more spectacular in chronic cases. Cokkinis and McElligott,^{42, 133} who have treated over 1,000 cases, found that their results were much better when sulfanilamide was withheld until the second week of the disease than when it was commenced in the first week. Complications such as prostatitis and epididymitis generally respond to the drug. The results with sulfanilamide in acute and subacute gonorrhea in the female adult are comparable to those in the male.^{6, 139, 161, 180} Brief hospitalization is advisable and doses

similar to those used in the male are necessary. Sulfanilamide failures occur, however, in both sexes and in all stages of gonorrhea. Most of the failures may be attributed either to starting the drug too early in the course of the disease, to insufficient dosage at the outset (less than 60 grains daily during the first two to five days) or to toxic symptoms. The number of failures might be reduced considerably if the patient could be kept in bed during the first few days of treatment. Such unpleasant toxic symptoms as headache, mental confusion, dizziness, et cetera, are much less annoying in bedridden than in ambulatory patients. What may be accomplished under controlled conditions is exemplified by the results of Townsend and Mulcahy.¹⁹⁷ They administered the drug in doses of 20 grains every four hours for five to ten days to eighty-two prisoners with gonorrhea and obtained cures that withstood provocative tests in eighty-one. *Vulvovaginitis.*—Sulfanilamide exhibits some therapeutic action in gonococcal vulvovaginitis,⁹⁵ but is less effective than estrogenic hormone.^{98, 192} *Meningitis.*—Two recoveries from gonococcal meningitis have been reported following sulfanilamide therapy.^{25, 146} *Conjunctivitis.*—Sulfanilamide is much more effective in gonorrheal ophthalmia than any other form of therapy. Corneal scarring may be prevented and the vision saved if the drug is administered promptly. Over fifty cases have been reported to date,^{65, 150, 154, 203, 210} practically all of whom made spectacular recoveries following sulfanilamide. *Arthritis.*—Dramatic results have been reported in gonorrheal arthritis.^{46, 183} At Detroit Receiving Hospital, seventeen such cases have been treated with sulfanilamide. Two were complete failures. One patient had had arthritis for four months and showed roentgenographic evidence of destructive changes in the joints before the drug was started. Sulfanilamide was given in sufficient dosage to keep the blood level between 10 and 15 mg. per cent for ten days but no improvement occurred. The other failure occurred in a patient who received the drug for eight days in doses which kept the blood level between 4 and 5 mg. per cent. We have since learned that blood concentrations below 5 mg. per cent are inadequate in gonorrheal arthritis. Two patients, who had shown no improvement during periods of three and

five days, respectively, when the blood levels were below 5 mg. per cent, recovered dramatically after the doses were increased sufficiently to raise the blood levels above 9 mg. per cent. Because of this experience, "large" doses are now being used at the outset. The other thirteen patients recovered completely from the arthritis. The pain disappeared promptly and the temperature usually reached normal within forty-eight hours. The swelling gradually disappeared and a normal range of motion was restored. One of those who recovered completely from the arthritis still had a positive prostatic smear. The remainder were negative bacteriologically.

Bacillary infections of the urinary tract.

—Sulfanilamide has proven effective against *B. Coli*, *Proteus ammoniæ* and *Aërobacter aërogenes* infections of the urinary tract.⁴¹

^{48, 53, 91, 92, 112, 126} The results depend upon whether or not the infection is complicated by other pathology in the urinary tract. Cook and Buchtel obtained sterile urines in sixty-four out of seventy uncomplicated bacillary infections, in fifty-two out of sixty-two complicated by prostatitis and in twenty-two out of fifty-eight cases complicated by stone, obstruction, cicatrix, et cetera. The efficiency of the drug depends upon the reaction of the urine and the concentration of free sulfanilamide attained. Since sulfanilamide is more effective in an alkaline urine, it is advisable to administer enough sodium bicarbonate to keep the urine slightly alkaline. Usually, 10 to 15 grains with each dose of sulfanilamide will suffice. While concentrations of free sulfanilamide as low as 25 to 40 mg. per cent are active in an alkaline urine, the optimum level is in the neighborhood of 200-300 mg. per cent. It is important that the free rather than the total sulfanilamide concentration be measured, because the acetylated derivative is less active therapeutically. A satisfactory concentration may be attained with a dose of 15 to 20 grains five times daily, provided that renal function is normal and fluids are restricted to 1200-1500 c.c. daily. It is our practice to begin with the foregoing doses as soon as the causative organism has been identified as one which is amenable to sulfanilamide. The temperature usually falls to normal and the urinary symptoms generally disappear promptly whereas the

pyuria clears up in a few days. In our experience, however, sulfanilamide frequently fails to sterilize the urine. Since prolonged administration increases the incidence of toxic symptoms, it is advisable to discontinue sulfanilamide and sodium bicarbonate after five to seven days and to substitute mandelic acid and ammonium chloride in doses sufficient to lower the Ph below 5.5. When infection is due to *Proteus ammonii*, it is impossible to obtain satisfactory urinary acidity. In the presence of renal insufficiency, both drugs are usually ineffective and may be dangerous. If sulfanilamide is given under such circumstances, daily determinations of the blood level are obligatory.

Infections in Which Sulfanilamide Is of Probable Value

Chancroid.—Practically all of the ninety-three cases reported to date responded dramatically to sulfanilamide.^{16, 66, 87, 103, 116} Good results were obtained with local application as well as with oral administration. Ulcers which had been present for weeks or months healed completely within one to two weeks and many buboes receded without surgical drainage.

Lymphogranuloma venereum is the only virus infection thus far studied in the experimental animal that has responded to sulfanilamide. Reports of clinical cures are appearing in the literature.^{77, 86, 167, 181, 182} To a group of twenty-two ambulatory females, the largest published to date, Shaffer¹⁸¹ administered small doses for one to two months and obtained "cures" in four and marked improvement in eleven. With larger doses over a period of ten to twelve days, Hamilton⁸⁶ obtained complete healing in thirteen out of fifteen male patients.

Trachoma.—In a series of 140 cases Loe¹²³ reported symptomatic improvement within twenty-four hours, followed later by paling of the conjunctiva, flattening of granules and follicles, disappearance of pannus and restoration of vision. Kirk¹¹⁵ has confirmed these findings in a series of twenty-five cases.

Undulant fever.—Dalrymple-Champneys⁵⁴ obtained good results with sulfanilamide in ten out of seventeen cases of undulant fe-

ver. Newman¹⁵⁵ reported that prontosil shortened the course of the disease in fifteen out of sixteen cases. Welch²⁰⁴ studied the effect of sulfanilamide upon the opsonic index toward brucella in five cases of undulant fever and in six patients with other infections. A marked increase in phagocytic activity followed sulfanilamide therapy in the patients with undulant fever, whereas no change occurred in the controls. These findings suggest that sulfanilamide may be of diagnostic as well as of therapeutic value in brucellosis. There are nineteen other articles in the literature reporting a total of thirty cases that responded to sulfanilamide or prontosil.

Pneumococcus infections. Pneumonia.—Encouraging results have been reported in type III pneumonia. Heintzelman, Hadley and Mellon⁹⁰ treated nine cases, with but two deaths resulting. Mellon¹⁴⁹ subsequently reported a total of sixteen cases with only two deaths, and mentioned that Bullowa had treated ten cases of type III pneumonia with two fatalities. Sadusk¹⁷⁴ treated nine cases without a loss. Sulfanilamide has probably been used widely in other types of pneumococcal pneumonia but no series large enough to evaluate the drug has been published to date. Reddick¹⁷⁰ treated a total of forty-six cases of pneumococcal pneumonia, including fourteen type I and ten type VII, and lost only three. Price and I have been using sulfanilamide in alternate cases of pneumococcal pneumonia at Receiving Hospital and have made a preliminary report¹⁶⁹ of our results in 115 cases treated with large doses of sulfanilamide, forty cases treated with Felton serum and ninety-four who received no specific therapy. The mortality rate was 15.7 per cent in the entire sulfanilamide group and 30.8 per cent in the controls. In fifty-seven cases of types I, II, V, VII and VIII pneumonia treated with sulfanilamide the mortality rate was 10.5 per cent; in forty cases of the same types treated with serum, it was 27.5 per cent. In twenty-one cases of pneumococcal bacteremia treated with sulfanilamide there were seven deaths; in twelve treated with serum there were six deaths; and in fifteen controls there were thirteen deaths.

Meningitis.—The best results in pneumococcal meningitis have been obtained by

Finland, Brown and Rauh⁶⁷ through the use of massive doses of sulfanilamide in conjunction with specific rabbit serum intravenously and followed by the injection of the patient's own serum intraspinally. Six out of the ten patients treated in this manner recovered. Neal¹⁵³ reported six recoveries among thirty-three patients treated with smaller doses of sulfanilamide supplemented by prontosil and serum. Allen, Mayer and Williams³ obtained three recoveries with sulfanilamide and spinal drainage. Ten additional recoveries have been reported in the literature. A type XX pneumococcal meningitis treated at Receiving Hospital recovered following sulfanilamide therapy. In a second case admitted with a frontal lobe abscess complicated by meningitis due to type III pneumococci, the spinal fluid became sterile and the cell count fell to normal under intensive chemotherapy. The abscess extended in spite of sulfanilamide and surgical drainage and eventually proved fatal.

Infections in Which Sulfanilamide Has Been Reported to Be of Value

Typhoid fever.—Six cases have been reported which appeared to improve following sulfanilamide or prontosil.^{14,59,88,170} A brother and sister, aged five and six, were admitted to Receiving Hospital during the first week of typhoid fever. The former served as a control while the latter received sulfanilamide in a dose of 1.0 to 1.5 grains per pound daily for nine days. This produced blood levels between 5.6 and 8.9 mg. per cent. The course of the disease was similar in the two children. The child who received sulfanilamide developed a typhoid bacilluria during treatment. The drug was thus of no value in this case.

Gas bacillus gangrene.—Sulfanilamide is bacteriostatic against *B. Welchii* in the experimental animal.^{21a} Sulfanilamide alone or in combination with prontosil has produced improvement within twelve to twenty-four hours in six cases of gas gangrene.^{24,72,111} These preliminary reports are sufficiently encouraging to justify a wider trial. At Receiving Hospital sulfanilamide has been used in three cases of gas gangrene, two of which recovered. The results were inconclusive, however, since serum, roentgen therapy and surgery were also employed.

Friedlander bacillus infection.—In a patient with a 17-year cough productive of sputum that repeatedly had shown Friedlander bacillus in pure culture, Brown²⁹ reported that the expectoration ceased entirely after sulfanilamide. He cited another case of Friedlander infection in which sulfanilamide caused a remarkable decrease in sputum. No therapeutic effects were demonstrable, however, in experimentally infected mice.⁸⁰

Bubonic plague.—Carman³⁶ reported that three out of six cases treated with prontosil died, whereas all nine controls succumbed to the infection.

Ulcerative colitis.—Collins⁴⁵ treated eleven cases of ulcerative colitis with sulfanilamide and obtained improvement in eight. Brown, Herrel and Barga²⁶ reported favorable results with neoprontosil in eight cases.

Actinomycosis.—Excellent results have been reported in two cases,¹⁶⁸ one of which was an abdominal actinomycosis refractory to other forms of treatment. We have used sulfanilamide in two cases of actinomycosis. A chronic ulcer of the lip, from which actinomyces was isolated, healed promptly and completely after sulfanilamide. The other patient had an extensive abdominal actinomycosis which proved refractory to large doses of the drug.

Malaria.—Three reports were published in 1937 of favorable results with the prontosils in malaria.^{57,94,200} Sulfanilamide, however, is of little or no value. Pakenham-Walsh¹⁶⁵ noted an increase in circulating parasites during sulfanilamide therapy and we have obtained similar results in two cases. A recent report⁸⁵ of four cases that were refractory to both prontosil and sulfanilamide throws some doubt upon the efficacy of the former.

Filaria.—One case of filarial lymphangitis is reported which was apparently aborted by sulfanilamide.⁵⁸

Infectious mononucleosis.—Sulfanilamide apparently shortened the course of two severe cases.¹⁰

Lupus erythematosus.—Satisfactory results were obtained with prontosil or sul-

fanilamide in nine out of twelve cases reported by four different authors.^{7,13,104,120}

Pemphigus.—Prompt remissions have occurred in three cases of pemphigus.^{37,118} These cases were not observed long enough to determine whether the remission was transient or permanent.

Infections in Which Sulfanilamide Is of Little or No Value

Staphylococcus.—Sulfanilamide is active against staphylococcal infections of the urinary tract, probably because of the high concentrations which may be obtained in the urine. Block and Pacella²³ reported a recovery from staphylococcal meningitis in a seventeen-day-old infant, treated with sulfanilamide. Nevertheless, sulfanilamide is usually ineffective against severe or widespread staphylococcal infections. Marcus¹⁴⁰ found that the drug had no effect on multiple staphylococcal infections of the skin, such as sycosis vulgaris, pustulous acne, et cetera. We have used large doses in staphylococcal septicemia, with negative results.

Streptococcus viridans and non-hemolyticus.—There is no convincing evidence that sulfanilamide is of value against these varieties of streptococci. The reported improvement in tonsillitis and other mild infections due to these organisms may have been spontaneous rather than due to the drug. The results in subacute bacterial endocarditis have been very disappointing. By raising the sulfanilamide level to between 20 and 30 mg. per cent we have sterilized the blood stream temporarily in bacterial endocarditis but have been unable to modify the uniformly fatal outcome. The drug is likewise of no value in rheumatic fever.^{147,191}

Virus infections.—Sulfanilamide is of no value in poliomyelitis^{176,195} and is ineffective against other neurotropic viruses.¹⁷³ It is also ineffective against the viruses of influenza and measles.^{81,158} It may, however, reduce the frequency and severity of bacterial complications such as bronchopneumonia and otitis media.¹⁹³

Pertussis.—Sulfanilamide does not appreciably alter the course of pertussis.¹⁹³

Syphilis.—Sulfanilamide is inert in rab-

bit syphilis³⁵ and should not be used in human syphilis.

Tuberculosis.—When guinea pigs are inoculated with tubercle bacilli and treated with sulfanilamide, retardation in the development of generalized tuberculosis is demonstrable^{34,172} but the disease is not eradicated. We have not been able to modify the course of miliary tuberculosis in humans with large doses of the drug. In pulmonary tuberculosis sulfanilamide is probably contraindicated.

Toxic Manifestations

Cerebral.—Headache, dizziness, lassitude, inability to concentrate, and slowed reaction time are frequent toxic manifestations. These symptoms are particularly troublesome in ambulatory patients. Because of the slowed reaction time, it is dangerous for anyone under sulfanilamide therapy to drive an automobile. Cerebral symptoms are seldom severe enough in bedridden patients to necessitate discontinuing the drug. Many of those taking the large doses outlined above become drowsy, a few become euphoric and an occasional person becomes delirious. Toxic psychosis has been reported.⁹⁶ Dogs given doses of .67 gm. per kilogram have developed spastic quadriplegia, blindness and apparent dementia as a result of cerebral edema.⁵² Such serious cerebral manifestations have not been reported in man and do not occur in animals receiving amounts comparable to the therapeutic doses in man. The cerebral symptoms observed in man generally clear up promptly after the drug has been discontinued. One case, however, developed transient cyanosis, confusion and negativism on two separate occasions, each 4 days after the last dose of sulfanilamide.⁵⁵

Gastro-intestinal.—Anorexia and nausea are common toxic manifestations. Nevertheless, the drug is generally retained when administered orally, vomiting being infrequent. Vague epigastric distress is not uncommon and diarrhea occurs rarely.

Diminished spermatogenesis has been noted during sulfanilamide therapy.^{12,105} There is generally a return to normal after the drug is stopped.

Cyanosis is a constant finding in patients receiving large doses of sulfanilamide. There is as yet no general agreement as to the cause of the cyanosis. Hartmann⁸⁹ has demonstrated methemoglobin by spectroscopy in every case of sulfanilamide cyanosis which he studied, and, like Wendel,²⁰⁵ has been able to reduce the methemoglobin concentration and abolish the cyanosis with methylene blue, injected intravenously in a dose of 1 to 2 mg. per kg. Sulfhemoglobinemia may occur when cathartics, particularly magnesium sulfate, are given along with sulfanilamide,^{60,166} but is rare when purging is avoided. Others^{39,145} have been unable to demonstrate either hemoglobin derivative in the majority of the cases exhibiting cyanosis, and have suggested that the discoloration may be due to an aniline pigment. Ottenberg and Fox¹⁶⁸ have shown that sulfanilamide solutions become violet after brief exposure to ultraviolet light and that erythrocytes, when added to such solutions, absorb the pigment, assuming a color similar to that of the red cells of patients under sulfanilamide therapy. Whether due to methemoglobin or pigmentation, cyanosis is not a serious complication. It is not necessary to discontinue the drug or even to modify the dosage in the presence of cyanosis. Even in pneumonia, we have observed no deleterious effects attributable to sulfanilamide cyanosis.

Acidosis.—When sulfanilamide is administered without alkali the blood carbon dioxide combining power usually falls and clinical acidosis may develop.^{187,198} This may be prevented by giving sodium bicarbonate or sodium lactate with each dose of sulfanilamide.

Fever is frequently induced by sulfanilamide therapy, developing in 9 per cent of a series of 307 adults treated by Long¹²⁸ and in 15.6 per cent of the cases reported by Hageman and Blake.⁸⁴ The elevation in temperature is usually moderate but may reach 106°F.¹⁰¹ The importance of fever lies in the fact that it is a forerunner of the more serious toxic manifestations such as dermatitis, hepatitis, hemolytic anemia and agranulocytosis. Long noted that practically all of the cases who developed serious therapeutic complications showed an early febrile response, and advised withdrawal of

the drug when fever is produced. This makes it necessary to distinguish between fever due to the drug and that due to the infection. Sulfanilamide fever most commonly develops between the fifth and tenth day of treatment and is usually preceded by one or more days of normal temperature. Whenever a secondary rise of temperature occurs during sulfanilamide administration, a careful search should be made for relapse of the infection. If the fever cannot be explained by the infection, the drug should be stopped and fluids forced. If sulfanilamide was responsible for the fever, the temperature should fall to normal within twenty-four to forty-eight hours of its withdrawal. Sulfanilamide fever may develop as early as the first day of treatment and thus become superimposed on the fever produced by the infection. Patients who show an early febrile response to the drug will usually develop a toxic dermatitis, which serves as a warning to stop the drug.

Dermatitis occurred in 1.6 per cent of the adults treated by Long,¹²⁸ and in 6.7 per cent of the cases reported by Hageman and Blake.⁸⁴ It is usually morbilliform in type but may be scarlatiniform, urticarial or purpuric. The dermatitis may be precipitated by exposure to sunlight or Alpine lamp and may be confined to the exposed portion of the body.¹⁵⁶ The rash usually fades within forty-eight to seventy-two hours of the withdrawal of the drug but occasionally becomes exfoliative and persists for weeks.¹⁵² Sulfanilamide should be stopped at the advent of the rash, because of the possibility of a protracted exfoliative dermatitis, and, even more, because the rash, like fever, is often a forerunner of the more serious toxic manifestations, such as hepatitis and the blood dyscrasias. If a patient has once had a dermatitis from sulfanilamide, one should be very cautious in administering the drug a second time. Salvin¹⁷⁷ reported a case who had originally developed a diffuse urticaria on the first day of therapy and subsequently had a recurrence after a single dose of one grain. A patient who was brought to Receiving Hospital with a diffuse scarlatiniform blush which had developed fifteen minutes after a ten-grain dose of sulfanilamide, stated that he had been cured of gonorrhea by the drug six months previously and that he had taken it intermittently

since then as a prophylactic. There were no untoward symptoms until the last previous dose, which had been followed by a mild transient skin eruption. How frequently, sensitivity will be acquired to sulfanilamide remains for the future to disclose.

Neuritis is an extremely rare toxic manifestation of sulfanilamide but is not uncommon after certain derivatives such as uliron. One case of optic neuritis has been reported which developed during sulfanilamide therapy and gradually cleared up after the drug was discontinued.⁸²

Jaundice is a common toxic symptom which necessitates immediate withdrawal of the drug. It is usually hemolytic in type and associated with a hemolytic anemia. Occasionally, it is due to a toxic hepatitis. Garvin⁷⁴ has collected five cases of sulfanilamide hepatitis from the literature and has reported five additional cases. In four of the latter, the jaundice appeared after the drug had been discontinued. One patient who had taken 500 grains during the first ten days in March without untoward effect, developed fever after a single ten grain dose on the sixteenth and again after a similar dose on the twenty-sixth. On the thirtieth, she developed jaundice which proved fatal. Cline⁴⁰ has reported an acute yellow atrophy following sulfanilamide.

Anemia is the commonest serious toxic manifestation of sulfanilamide. Acute hemolytic anemia developed in 4 per cent of a series of 522 patients treated in the Johns Hopkins Hospital²¹² and in 5.2 per cent of the 115 cases of pneumonia treated at Detroit Receiving Hospital.¹⁶⁹ In both series of cases the earliest signs of anemia appeared within twenty-four to seventy-two hours of the onset of medication. The earliest clinical sign was jaundice. This was accompanied by an elevated icteric index and an increased excretion of urobilin in the urine. In five out of our six cases, an abrupt neutrophilic leukocytosis occurred at the onset of the anemia. The hemoglobin had begun to fall at the onset of the jaundice and reached its lowest level within another twenty-four to seventy-two hours. In each of our cases the total fall in hemoglobin exceeded 4 gm. per cent and the total fall in red cells was in excess of 1,500,000

per cu. mm. Only one death has been reported from hemolytic anemia.²¹¹ If the drug is withdrawn at the onset of the anemia, fluids forced and transfusions given, recovery almost invariably occurs. Four out of five of Wood's patients who were given a second course of sulfanilamide after they had recovered from acute hemolytic anemia developed a recurrence. Whereas acute hemolytic anemia practically never develops after the first week of medication, a gradual and more moderate fall in hemoglobin and red cells is not uncommon. We have noted this in twenty-one cases of pneumonia treated with sulfanilamide. In twelve of these, the anemia appeared during the administration of sulfanilamide, and in the other nine, it developed after the drug was discontinued.

Granulocytopenia is a rare but serious complication of sulfanilamide therapy. Kracke¹¹⁷ has collected nine cases due to sulfanilamide and two due to its derivatives. Ten additional cases^{4, 8, 51, 107, 109, 127, 135, 137, 196} have been reported from sulfanilamide and two from sulfapyridine.^{49, 108} Two cases which occurred in the Detroit area have not as yet been reported. Practically all of those who developed granulocytopenia had taken the drug for two weeks or longer. If warning signs such as fever and dermatitis are heeded, there is little danger of agranulocytosis during the first ten days of therapy.

Sulfanilamide Derivatives

Prontosil and neoprontosil are less effective than sulfanilamide and consequently are being displaced more and more. Concerted efforts are being made to produce a derivative that is more efficient, yet, less toxic, than sulfanilamide. Uliron was introduced with the claim that it was more effective than sulfanilamide in gonorrhea but more extensive trial has shown that it is not only inferior therapeutically but also more toxic to the nervous system. Certain sulfones, particularly bis-p-acetylaminophenyl sulfone are superior to sulfanilamide in experimental streptococcal and pneumococcal infections in mice but appear to be too toxic in man.

The most promising derivative introduced to date is 2-(p-amino-phenylsulfonamido)-pyridine (sulfapyridine). Whitby²⁰⁷ reported that this compound was much more active than sulfanilamide in experimental

pneumococcal infections. His results were sufficiently encouraging to stimulate a wide clinical trial in pneumonia. Evans and Gaisford⁶³ reported a mortality rate of 8 per cent in 100 cases treated with sulfapyridine and a mortality rate of 27 per cent in 100 alternate controls. Their results are inconclusive, however, since the cases were not analyzed as to type of pneumococcus, duration before treatment, blood culture and extent of the pneumonia. Several other articles reporting good results in series of one to eight cases likewise do not permit a critical clinical evaluation of the drug in pneumonia. Three recoveries from staphylococcal septicemia^{64, 148, 159} have been reported following sulfapyridine. Three groups of workers,^{17, 124, 134} each of whom have used sulfapyridine in over 100 cases of gonorrhea, state that it is superior to sulfanilamide. In no other infections studied to date does sulfapyridine appear to possess an advantage over sulfanilamide. Sulfapyridine is absorbed from the gastro-intestinal tract more slowly and more irregularly than sulfanilamide, does not penetrate the spinal or pleural fluid in as high a concentration and is excreted more slowly and irregularly.¹²⁹ This makes sulfapyridine more difficult to administer and makes serious toxic manifestations more likely. Two cases of granulocytopenia have been reported already.^{49, 108} Marshall¹⁴¹ found that sulfapyridine was more toxic in mice than sulfanilamide and warned against using it in diseases in which sulfanilamide has been shown to be effective.

Requisites for Sulfanilamide Administration

Sulfanilamide is a very valuable drug when used intelligently but is dangerous when taken indiscriminately and without adequate supervision. The following are considered minimal requirements for rational sulfanilamide therapy: (1) identification of the infection as one which is amenable to sulfanilamide; (2) exclusion of contraindications. The drug is contraindicated if there was a history of jaundice, purpura, hemolytic anemia, granulocytopenia or neuritis following a previous course and should be used with extreme caution, if at all, after it has once produced fever or dermatitis; (3) daily clinical observation for toxic symptoms and signs; (4) daily hemoglobin

determinations during the first week and twice weekly thereafter; (5) white blood count every other day; (6) daily blood sulfanilamide determinations are obligatory in the presence of renal insufficiency and are desirable in all cases as a check on the adequacy of the dose.

Bibliography

- Adair, F. L., Hesselstine, H. C., and Hac, L. C.: *Jour. A.M.A.*, 111:766, 1938.
- Ainsworth, T.: *Mississippi Doctor*, 16:47, 1938.
- Allen, W. B., Mayer, S., and Williams, R.: *Am. Jour. Med. Sc.*, 196:99, 1938.
- Allen, J. G., and Short, C. L.: *New Engl. Jour. Med.*, 219:6, 1938.
- Alyea, E. P., Daniel, W. E., and Harris, J. S.: *South. Med. Jour.*, 31:395, 1938.
- American Neisserian Medical Society: *Ven. Dis. Inform.*, 19:283, 1938.
- Anderson, H. F.: *Arch. Derm. Syph.*, 38:821, 1938.
- Ballenger, H. C.: *Ann. Otol., Rhinol. and Laryng.*, 46:1129, 1937.
- Banks, H. St.: *Lancet*, 2:7, 1938.
- Bannock, E. G., Brown, A. E., and Foster, F. P.: *Jour. A.M.A.*, 111:770, 1938.
- Barbellion, P.: *Presse med.*, 46:421, 1938.
- Barbellion, P., and Torres, F.: *Presse med.*, 46:1295, 1938.
- Barber, H. W.: *Brit. Med. Jour.*, 2:774, 1937.
- Barer, M.: *Lancet*, 2:964, 1937.
- Barker, R. H.: *New Engl. J. Med.*, 219:41, 1938.
- Batchelor, R. C. L., and Lees, R.: *Brit. Med. Jour.*, 1:1100, 1938.
- Batchelor, R. C. L., Lees, R., Robert, M., and Braine, G. I. H.: *Brit. Med. Jour.*, 2:1142, 1938.
- Bauer, H., and Rosenthal, S. M.: *Publ. Health Rep.*, 53:40, 1938.
- Bliss, E. A., and Long, P. H.: *Bull. Johns Hopk. Hosp.*, 40:149, 1937.
- Bliss, E. A., and Long, P. H.: *New Engl. Jour. Med.*, 217:18, 1937.
- Bliss, E. A., and Long, P. H.: *Jour. A.M.A.*, 109:1524, 1937.
- Bliss, E. A., Long, P. H., and Feinstone, W. H.: *South. Med. Jour.*, 31:303, 1938.
- Block, H., and Pacella, B. L.: *Jour. A.M.A.*, 110:508, 1937.
- Bohlman, H. R.: *Jour. A.M.A.*, 109:254, 1937.
- Branham, S. E., Mitchell, R. H., and Brainin, W.: *Jour. A.M.A.*, 110:1804, 1938.
- Brown, A. E., Herrel, W. E., and Borgen, J. A.: *Proc. Staff Mayo Clin.*, 13:561, 1938.
- Brown, D. E.: *Brit. Med. Jour.*, 2:230, 1937.
- Brown, J. L.: *Brit. Med. Jour.*, 1:1157, 1937.
- Brown, P. K.: *Calif. and West. Med.*, 49:144, 1938.
- Brownstein, S. W.: *Clin. Med. and Surg.*, 45:256, 1938.
- Bucy, P. C.: *Jour. A.M.A.*, 111:1639, 1938.
- Bucy, P. C.: *Jour. A.M.A.*, 109:1007, 1937.
- Butler, W. W. S.: *Virginia M. Monthly*, 65:140, 1938.
- Buttle, G. A. H., and Parish, H. J.: *Brit. Med. Jour.*, 2:776, 1938.
- Campbell, A. D.: *Am. Jour. Syph.*, 21:524, 1937.
- Carman, J. A.: *East African Med. Jour.*, 14:362, 1938.
- Caro, M. R.: *Arch. Derm. Syph.*, 37:196, 1938.
- Carpenter, C. M., Hawley, P. L., and Barbour, G. M.: *Science*, 88:530, 1938.
- Chesley, L. C.: *Jour. Clin. Investigation*, 17:445, 1938.
- Cline, E. W.: *Jour. A.M.A.*, 111:2384, 1938.
- Cokkinis, A. J.: *Brit. Med. Jour.*, 1:1151, 1938.
- Cokkinis, A. J., and McElligott, G. L. M.: *Lancet*, 2:355, 1938.
- Colebrook, L., Buttle, G. H., and O'Meara, R. A. Q.: *Lancet*, 2:1323, 1936.
- Colebrook, L., and Purdie, A. W.: *Lancet*, 2:1291, 1937.
- Collins, E. N.: *Cleveland Clin. Quart.*, 5:161, 1938.
- Colston, J. A. C., Dees, J. E., and Harrill, H. C.: *South. Med. Jour.*, 30:1165, 1937.
- Coman, D. R.: *Am. Jour. Med. Sc.*, 196:273, 1938.
- Cook, E. H., and Buchtel, H. A.: *Minn. Med.*, 21:546, 1938.
- Coxon, R. V., and Forbes, J. R.: *Lancet*, 2:1412, 1938.
- Crean, T. F.: *Lancet*, 2:895, 1937.
- Culbreath, P. H.: *Jour. South Carolina Med. Assn.*, 34:307, 1938.
- Custer, R. P., Foster, H. W., Lamotte, W. O., and Phinney, J. D.: *Arch. Path.*, 26:904, 1938.
- Cuthbert, J. C.: *Lancet*, 2:720, 1938.
- Dalrymple-Champneys, W.: *Brit. Med. Jour.*, 2:471, 1938.
- Danzeger, L.: *Bull. Johns Hopkins Hosp.*, 63:340, 1938.
- Dees, J. E., and Colston, J. A. C.: *Jour. A.M.A.*, 108:1855, 1937.
- de Leon, A. D.: *Pub. Health Rep.*, 52:1460, 1937.
- Denovan, A. E. B.: *Brit. Med. Jour.*, 2:919, 1938.
- Diefenbach, W. E., and Yuskis, A. S.: *Calif. and West. Med.*, 49:146, 1938.
- Discombe, G.: *Lancet*, 1:626, 1937.
- Domagk, G.: *Deut. Med. Wchn.*, 61:250, 1935.
- Eldahl, A.: *Lancet*, 1:712, 1938.
- Evans, G. M., and Gaisford, W. F.: *Lancet*, 2:14, 1938.
- Fenton, W. J., and Hodgkiss, F.: *Lancet*, 2:667, 1938.
- Fernandez, L. J., and Fernandez, R. F.: *Am. Jour. Ophthalmol.*, 21:763, 1938.
- Fields, R. J., and Weinstein, J. J.: *Urol. and Cutan. Rev.*, 42:880, 1938.
- Finland, M., Brown, J. W., and Rauh, A. E.: *New Engl. Jour. Med.*, 218:1033, 1938.
- Flake, C. G., and Carey, B. W.: *New Engl. J. Med.*, 217:1033, 1937.
- Foulis, M. A., and Barr, J. B.: *Brit. Med. Jour.*, 1:445, 1937.
- Fourneau, E., Trefouel, J., Nitti, F., and Bovet, D.: *Bul. acad. med.*, 118:210, 1937.
- Fuller, A. T.: *Lancet*, 1:194, 1937.
- Fuller, G. W., and Kellum, J. M.: *Southern Surgeon*, 7:305, 1938.
- Gardner, W. W.: *New York St. Jour. Med.*, 37:1673, 1937.
- Garvin, C. F.: *Jour. A.M.A.*, 111:2283, 1938.
- Gay, F. P., and Clark, A. R.: *Jour. Exp. Med.*, 66:535, 1937.
- Gibberd, G. F.: *Brit. Med. Jour.*, 2:695, 1937.
- Gjuric, N. J.: *Munch. Med. Wchn.*, 85:335, 1938.
- Gregory, K. K.: *Rhode Island Med. Jour.*, 21:141, 1938.
- Gross, P., Cooper, F. B., and Lewis, M.: *Jour. Inf. Dis.*, 63:245, 1938.
- Gross, P., Cooper, F. B., and Lewis, M.: *Proc. Soc. Exp. Biol. Med.*, 39:12, 1938.
- Gunn, W.: *Lancet*, 1:795, 1938.
- Hageman, P. O.: *Jour. Pediat.*, 11:195, 1937.
- Hageman, P. O., and Blake, F. G.: *Am. Jour. Med. Soc.*, 195:163, 1938.
- Hageman, P. D., and Blake, F. G.: *Jour. A.M.A.*, 109:642, 1937.
- Hall, W. E. B.: *Jour. Pharmacol.*, 63:353, 1937.
- Hamilton, G. R.: *Military Surgeon*, 83:431, 1938.
- Hanschell, H. M.: *Lancet*, 1:886, 1938.
- Harkleroad, F. S.: *West Virginia Med. Jour.*, 34:549, 1938.
- Hartmann, A. F., Perley, A. M., and Barnett, H. L.: *J. Clin. Investigation*, 17:699, 1938.
- Heintzelman, J. H. L., Hadley, P. B., and Mellon, R. R.: *Am. Jour. Med. Sc.*, 193:759, 1937.
- Helmholz, H. F.: *Jour. A.M.A.*, 111:1719, 1938.
- Helmholz, H. F., and Osterberg, A. E.: *Proc. Staff Mayo Clin.*, 12:377, 1937.
- Highman, W. J., Jr.: *J. Lab. and Clin. Med.*, 23:790, 1938.
- Hill, R. A., and Goodwin, M. H.: *South. Med. Jour.*, 30:1170, 1937.
- Hoffmann, S. J., Schneider, M., Blatt, M. L., and Herold, R. D.: *Jour. A.M.A.*, 110:1541, 1938.
- Hogan, B. W., and McNamara, P. J.: *U. S. Naval Bull.*, 36:60, 1938.
- Hogarth, J. C.: *Brit. Med. Jour.*, 2:1160, 1937.
- Holmes, J. W., Albright, J., and Gildersleeve, N.: *Jour. Pediat.*, 12:610, 1938.
- Hoyle, A. L., and Bailey, J. H.: *Ann. Otol., Rhinol. and Laryngol.*, 46:1124, 1937.
- Humiston, H. W.: *Illinois Med. J.*, 72:545, 1937.
- Humphrey, G. P.: *Brit. Med. Jour.*, 2:680, 1937.
- Hussey, H. H.: *Med. Ann., Dist. Columb.*, 6:272, 1937.
- Hutchinson, A.: *Lancet*, 1:1047, 1938.
- Ingalls, A. E.: *Arch. Derm. Syph.*, 37:879, 1938.
- Jaubert, A., and Motz, C.: *Presse med.*, 46:237, 1938.
- Jievesbury, E. C. D.: *Lancet*, 1:1262, 1938.
- Johnston, F. D.: *Lancet*, 2:1044, 1938.
- Johnston, F. D.: *Lancet*, 2:1200, 1938.
- Jones, H. W., and Miller, C. P.: *Jour. Lab. Clin. Med.*, 24:121, 1938.
- Keefer, C. S.: *Am. Jour. Med. Sc.*, 195:701, 1938.
- Kennedy, W. C.: *Illinois Med. Soc.*, 73:260, 1938.
- Kenny, M., Johnston, F. D., and Von Haebler, T.: *Lancet*, 2:119, 1937.
- Kent, G. B., and Sawyer, K. C.: *J. Kansas Med. Soc.*, 39:379, 1938.
- Key, J. A.: *Jour. A.M.A.*, 111:2163, 1938.
- Kirk, R., McKelvie, A. R., and Hussein, H. A.: *Lancet*, 2:994, 1938.
- Kornblith, B. A., Jacoby, A., and Wishengrad, M.: *Jour. A.M.A.*, 111:523, 1938.
- Kracke, R. R.: *Jour. A.M.A.*, 111:1256, 1938.
- Lain, E. S., and Lamb, J. H.: *ibid.*, 37:840, 1938.
- Lee, H. M., Anderson, R. C., and Chen, K. K.: *Proc. Soc. Exp. Biol. and Med.*, 38:368, 1938.
- Linsser, K.: *Dermatol. Wchn.*, 106:342, 1938.
- Lockwood, J. S., and Lynch, H. M.: *Jour. Immunol.*, 35:155, 1938.
- Lockwood, J. S., Coburn, A. F., and Stokinger, H. E.: *Jour. A.M.A.*, 111:2259, 1938.

SULFANILAMIDE—MYERS

123. Loe, F.: *Jour. A.M.A.*, 111:1371, 1938.
124. Lloyd, V. E., Erskine, D., and Johnson, A. G.: *Lancet*, 2:1160, 1938.
125. Long, P. H., and Bliss, E. A.: *Jour. A.M.A.*, 108:32, 1937, and *Arch. Surg.*, 34:351, 1937.
126. Long, P. H., and Bliss, E. A.: *South. Med. Jour.*, 31:308, 1938.
127. Long, P. H., and Bliss, E. A.: *Canad. Med. Assn. Jour.*, 37:457, 1938.
128. Long, P. H., Bliss, E. A., and Feinstone, W. H.: *Jour. A.M.A.*, 112:115, 1939.
129. Long, P. H., and Feinstone, W. H.: *Proc. Soc. Exp. Biol. Med.*, 39:486, 1938.
130. Longcope, W. T.: *Am. Jour. Med. Sc.*, 195:577, 1938.
131. Lucas, C. C.: *Canad. Med. Assoc. Jour.*, 39:111, 1938.
132. Lyons, C., and Mangiaracine, A.: *Ann. Surg.*, 108:813, 1938.
133. McElligott, G. L. M.: *Brit. Med. Jour.*, 2:908, 1938.
134. McElligott, G. L. M.: *Brit. Med. Jour.*, 2:908, 1938.
135. McGuire, P. R., and McGuire, J. P.: *Illinois Med. Jour.*, 73:425, 1938.
136. McIntosh, R., Wilcox, D. A., and Wright, F. H.: *J. Pediat.*, 11:167, 1937.
137. McIntosh, R., Wilcox, D. A., and Wright, F. H.: *Jour. Pediat.*, 11:167, 1937.
138. Mahoney, J. F., Van Slyke, C. J., Surgeon, P. A., and Thayer, J. D.: *Am. J. Syph.*, 22:691, 1938.
139. Manor, A.: *Calif. and West. Med.*, 49:208, 1938.
140. Marcus, M.: *Brit. Med. Jour.*, 2:92, 1938.
141. Marshall, E. K., Bratton, A. C., and Litchfield, J. T.: *Science*, 88:597, 1938.
142. Marshall, E. K., Jr., Emerson, K., and Cutting, W. C.: *Jour. A.M.A.*, 108:953, 1937.
143. Marshall, E. K., Jr., Emerson, K., and Cutting, W. C.: *Jour. Pharmacol.*, 61:191, 1937.
144. Marshall, E. K., Jr., Emerson, K., and Cutting, W. C.: *J. Pharmacol.*, 61:196, 1937.
145. Marshall, E. K., Jr., and Walzl, E. M.: *Bull. Johns Hopk. Hosp.*, 61:140, 1937.
146. Marvin, H. P., and Wilkinson, W. E.: *Jour. A.M.A.*, 110:800, 1938.
147. Massel, B. F., and Jones, T. D.: *New Engl. Med. Jour.*, 218:876, 1938.
148. Maxwell, J.: *Lancet*, 2:1233, 1938.
149. Mellon, R. R., Gross, P., and Cooper, F. B.: *Sulfanilamide therapy of bacterial infections*. Thomas, 1938.
150. Michels, M. W.: *Jour. Pediat.*, 13:527, 1938.
151. Muraz, G., Chiole, H., and Queguimer, A.: *Presse med.*, 46:1113, 1938.
152. Myers, G. B., VonderHeide, E. C., and Balcerski, M.: *Jour. A.M.A.*, 109:1983, 1937.
153. Neal, J. B.: *Jour. A.M.A.*, 111:1353, 1938.
154. Newman, H. W.: *Texas St. Jour. Med.*, 33:585, 1937.
155. Newman, C. Z.: *Brit. Med. Jour.*, 2:342, 1938.
156. Newman, B. A., and Sharlet, H.: *Jour. A.M.A.*, 109:1036, 1937.
157. Nitti, F., Bovet, D., and Depierre, F.: *Compt. rend. Soc. de Biol.*, 124:16, 1937.
158. Oakley, C. L.: *Brit. Med. Jour.*, 1:895, 1938.
159. O'Brien, E. J., and McCarthy, C. J.: *Lancet*, 2:1232, 1938.
160. Orr, H.: *Canad. Med. Assn. Jour.*, 37:364, 1937.
161. Orr, H.: L. C.: Cokkinis, A. J., and McElligott, G. L. M.: *L. C.*
162. Osgood, E. E., and Powell, H. M.: *Proc. Soc. Exp. Biol. Med.*, 39:37, 1938.
163. Ottenberg, R., and Fox, C. L.: *Proc. Soc. Exp. Biol. Med.*, 38:479, 1938.
164. Pages, R., and Dugnet, J.: Magitot, A. M., et al; *Dollfus, M. A.*, et al: *Presse med.*, 46:476, 1938.
165. Pakenham-Walsh, R., and Rennie, A. T.: *Lancet*, 2:79, 1938.
166. Paton, J. P. J., and Eaton, J. C.: *Lancet*, 1:1159, 1937.
167. Pontoppidan, B.: *Ugesk. F. Laeger*, 100:1205, 1938.
168. Poulton, E. P.: *Brit. Med. Jour.*, 2:929, 1937. Walker, D.: *Lancet*, 1:1219, 1938.
169. Price, A. E., and Myers, G. B.: *Jour. A.M.A.*, 112:1021, 1939.
170. Reddick, W. G.: *Internat. Clin.*, 3:200, 1938.
171. Reuter, F. A.: *Med. Ann. Dist. Columbia*, 6:117, 1937.
172. Rich, A. R., and Fallis, R. H.: *Bull. Johns Hopk. Hosp.*, 62:77, 1938.
173. Rosenthal, S. M., Wooley, J. G., and Bauer, H.: *Pub. Health Rep.*, 52:1211, 1937.
174. Sadusk, J. F.: *New Engl. Jour. Med.*, 219:787, 1938.
175. Sako, W., Dwan, F. F., and Platou, E. S.: *Jour. A.M.A.*, 111:995, 1938.
176. Sako, W. S., Wilder, R. L., and Stroesser, A. V.: *Jour. Lancet*, 58:223, 1938.
177. Salvin, M.: *Jour. A.M.A.*, 109:1038, 1937.
178. Schwenker, F. F.: *Med. Clin. N. Am.*, 21:1449, 1937.
179. Schmidt, J.: *Munch. Med. Wchn.*, 83:2122, 1936.
180. Sewell, G.: *J. Mich. Med. Soc.*, 37:339, 1938.
181. Shaffer, L. W., and Arnold, E.: *Arch. Derm. and Syph.*, 38:705, 1938.
182. Shropshire, G.: *Illinois Med. Jour.*, 74:153, 1938.
183. Simmons, E. E., and Dunn, F. L.: *Nebraska Med. Jour.*, 23:451, 1938.
184. Sinkoe, S. J.: *Jour. Med. Assn. Georgia*, 27:382, 1938.
185. Smith, A.: *Lancet*, 2:1064, 1937.
186. Snodgrass, W. R., and Anderson, T.: *Brit. Med. Jour.*, 2:1156, 1937.
187. Southworth, H.: *Proc. Soc. Exp. Biol. Med.*, 36:58, 1937.
188. Speert, H.: *Bull. Johns Hopk. Hosp.*, 63:337, 1938.
189. Stewart, H. L., and Pratt, J. P.: *Jour. A.M.A.*, 111:1456, 1938.
190. Stewart, J. D., Rourke, G. M., and Allen, J. G.: *Jour. A.M.A.*, 110:1885, 1938.
191. Swift, H. F., Moen, J. K., and Herst, G. K.: *Jour. A.M.A.*, 110:426, 1938.
192. TeLinde, R. W.: *Jour. A.M.A.*, 110:1633, 1938.
193. Thompson, A. R., and Greenfield, C. R. M.: *Lancet*, 2:991, 1938.
194. Toomey, J. A.: *Ann. Int. Med.*, 12:166, 1938.
195. Toomey, J. A., and Takacs, W. S.: *Arch. Pediat.*, 55:307, 1938.
196. Touraine, A., Durel and Baudouin: *Presse Med.*, 46:83, 1938.
197. Townsend, T. M., and Mulcahy, T. M.: *New York State Jour. Med.*, 38:833, 1938.
198. Towsley, H. A., and Engelfried, J. J.: *J. Pediat.*, 13:939, 1938.
199. Trefouel, J., Trefouel, J., Nitti, F., and Bovet, D.: *Compt. rend. Soc. Biol.*, 120:756, 1935, and *Presse med.*, 45:839, 1937.
200. Van der Wielen, Y.: *Nederl. Tij. v. Geneesk.*, 81:2905, 1937.
201. Van Slyke, C. J., Thayer, D. J., and Mahoney, J. F.: *Ven. Dis. Inf.*, 18:417, 1937.
202. Waghelstein, J. M.: *Jour. A.M.A.*, 111:2172, 1938.
203. Warta, J. J.: *Med. World*, 56:454, 1938.
204. Welch, H., Wentworth, J. A., and Mickle, F. L.: *Jour. A.M.A.*, 111:226, 1938.
205. Wendel, W. B.: *Jour. A.M.A.*, 109:1216, 1937.
206. Weschoeff, C., and Smith, E. C.: *New Engl. Jour. Med.*, 219:947, 1938.
207. Whitby, L. E. H.: *Lancet*, 1:1210, 1938.
208. White, H. J., and Parker, J. M.: *Jour. Bact.*, 36:481, 1938.
209. Willien, L. J.: *Jour. A.M.A.*, 110:630, 1938.
210. Willis, T.: *Yale Jour. Biol. and Med.*, 10:275, 1938.
211. Wood, H.: *South. Med. Jour.*, 31:646, 1938.
212. Wood, W. B.: *Jour. A.M.A.*, 111:1916, 1938.

CAUSES OF CORONARY THROMBOSIS

Although overexertion and intense emotional stress appear to have no bearing on the coronary thrombosis attack itself, they are directly concerned in the primary causes of the condition leading up to the attack. Dr. J. C. Paterson, Regina, Sask., Canada, states in *The Journal of the American Medical Association* for March 11.

A coronary thrombus is a blood clot in an artery which shuts off the supply of blood to the heart. From autopsy studies, Dr. Paterson finds that the clot forms gradually, possibly taking several days before it completely obstructs the artery. Pointing out that it has been the common belief that overexertion or intense emotional stress has a direct

bearing on the fatal attack of coronary thrombosis, the doctor says his findings indicated such activities are merely coincidental.

Sudden and temporary increases in the blood pressure are commonly encountered in circumstances of unusual exertion and emotion. The autopsy appearance of the clots in coronary thrombosis in a series of fatal cases studied by the author strongly suggested to him that excessive exercise and emotional stress, with the accompanying rise in blood pressure, are intimately concerned in the production of coronary artery thrombosis but apparently have little relationship to the fatal attack, which may take place several days later.

ETIOLOGICAL FACTORS IN NON-INSTITUTIONAL PATIENTS WITH EPILEPSY*

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It is now a generally accepted fact that epilepsy cannot be considered as a unitary disease entity, but is on the contrary a symptom-complex accompanying a variety of conditions which directly or indirectly impair the integrated function of the central nervous system. Recognition of this fact has long been implied in the customary subdivision of epilepsy into certain broad clinical groups such as organic, toxic, circulatory, endocrine, reflex, and so on, while the term "idiopathic" has been reserved for the large group in which no cause can be found. In an elaboration of this approach to the problem of etiology, Stanley Cobb¹ enumerated as many as sixty pathologic states in which convulsions could occur, and on this basis postulated at least twelve physiologic mechanisms which could act as precipitating agents.

The purpose of the present paper is to report some of the major etiologic factors found on examination of 1,000 non-institutional epileptic patients, emphasis being placed on those contributing causes which can be determined by clinical procedures available in the present admittedly incomplete stage of our knowledge. The material was taken from the records of patients with seizures who were examined at the University Hospital at Ann Arbor during the eleven year period between 1924 and 1935. In addition to the routine neurological examination and a pediatric consultation for each child under twelve years, practically all of the cases had skull roentgenograms and spinal fluid examinations. Approximately ten per cent had additional encephalographic studies. In every case a definite diagnosis of grand or petit mal epilepsy had been made, syncope or hysterical unconsciousness having been excluded so far as this is clinically possible. A report on the hereditary factors in the family histories of these patients appeared in a previous publication in this JOURNAL.²

The group studied included 577 males and 423 females, of which 842 had typical grand mal attacks and the remaining 158 had petit mal attacks without accompanying major seizures. Although the group includes patients of all ages, the majority were children and young adults. The average age of onset of seizures for the series as a whole was 15.1, the males averaging 16.3

and the females 13.6 years. Attacks were present since birth in 108 of the patients, and began during the first three years of life in an additional ninety-five cases.

As shown in the accompanying table, the largest group, 64.7 per cent of the total, is comprised of individuals of normal intelligence in whom no definite cause for the attacks could be found. It will be seen that the relative proportion of patients falling in this classification is practically identical for the two types of attacks. Attacks were present since birth in 51 of the 647 patients in this subgroup.

Mental deficiency and deterioration occurred in 120 cases, eighty-two without and thirty-eight with clinical or encephalographic evidence of organic central nervous system defect, either congenital or acquired. The average age of onset of seizures for all of the patients presenting evidence of mental deficiency at the time they were examined was 6.3 years. The fourth item in the table refers to patients with various organic defects but with average or at least unimpaired intelligence. The post-traumatic cases, so far as these could be separated from the idiopathic, are somewhat arbitrarily composed of patients who gave a history of severe head injury accompanied by prolonged unconsciousness and followed by seizures within several years. Five cases of birth injury are included in this group. The sixth subgroup comprises those in whom convulsions accompanied or followed infectious or inflammatory processes such as meningitis, brain abscess, purulent encephalitis, et cetera. In nineteen of these cases residual states of epidemic encephalitis were considered definitely related to the attacks. Syphilis was the specific precipitating agent of attacks in twelve males and five females.

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NON-INSTITUTIONAL PATIENTS WITH EPILEPSY—HIMLER

Seizures were attributed to brain tumor in twenty-one cases, and of these, sixteen were verified by operation. In thirty-six cases where seizures began in later adult years,

types of attacks have a common etiologic basis. From this study it seems fairly conclusively shown that the greater the organic

Etiologic Factors	Average age of onset	Grand mal	Petit mal	Total cases
1. Idiopathic, with normal intelligence.....	14.0	540	107	647
2. Mental deficiency, without organic central nervous system defects	6.8	74	8	82
3. Mental deficiency with organic central nervous system defects*	5.0	34	4	38
4. Organic central nervous system defects*; normal intelligence	9.8	32	8	40
5. Cerebral trauma, including birth injury.....	17.8	72	10	82
6. Infections and inflammations of the central nervous system	11.6	27	10	37
7. Syphilis of the central nervous system.....	28.0	14	3	17
8. Vascular hypertension, arteriosclerosis or senility	51.2	30	6	36
9. Cerebral neoplasm	28.2	19	2	21
Totals		842	158	1,000

the onset appeared to be definitely associated with vascular hypertension, cerebral arteriosclerosis, or senile brain changes.

While a gross survey of this type brings out little on the whole that is significantly new, it does serve to emphasize again the variety of causes for which the convulsive syndrome represents but a dramatic symptom. In contrast to the findings for institutionalized epileptics, a definite degree of mental deficiency or deterioration was found in only 12 per cent of these patients. Although the relative number in the petit mal group is too small to give conclusive evidence, the parallel proportion of cases in each of the etiological subgroups adds weight to the prevailing belief that the two

and intellectual defect—whether or not this is or can be attributed to heredity—the earlier the convulsive symptom will make its appearance. While on the basis of routine clinical evaluation in approximately 60 per cent of the cases no cause other than a constitutional predisposition at this time can be brought forward, the fact must not be overlooked that in at least two out of five non-institutional epileptic patients an etiological basis can be determined with the use of ordinary clinical diagnostic criteria at present available. Such facts constitute convincing indication of the need for a more and more intensive approach with respect to basic etiologic elements.

References

1. Cobb, Stanley: Concerning fits. *Med. Clinics*, 19:1583, (March) 1936.
2. Himler, L. E.: Incidence of seizures in the families of extramural patients with epilepsy. *Jour. Mich. State Med. Soc.*, 36:846, (Nov.) 1937.

*Organic conditions under items 3 and 4 include congenital brain defects, cortical atrophy, internal hydrocephalus, Little's disease, porencephaly, spastic hemiplegia, and sub-arachnoid hemorrhage.

THE MARK OF A MAN

A sensible man does not brag . . . You shall not tell me that your commercial house, your partners, or yourself are of importance; you shall not tell me that you have learned to know men; you shall make me feel that; your saying so unsays it. You shall not enumerate your brilliant acquaintances nor tell me by their titles what books you have read. I am to infer that you keep good company by your better information and manners, and so infer your reading from the wealth and accuracy of your conversation . . . The mark of the man of the world is absence of pretensions. He does not make a speech, he takes a low business-tone, avoids all brag, is nobody, dresses plainly, promises not at all, performs much, speaks in monosyllables, hugs his fact. He calls his employment by its lowest name, and so takes from evil tongues their sharpest weapon . . . Men take each other's measure when they meet for the first time—and every time they meet . . . Men do not convince by their argument, but by their personality.—RALPH WALDO EMERSON.

EPILEPSY AS A PRISON PROBLEM*

Its Treatment with Sodium Diphenylhydantoinate

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A prison is an institution where behavior offenders are segregated for the protection of society. The primary function of the State, in its consideration of its delinquents and criminals, is to refit them for proper citizenship upon their return to community life. To accomplish this purpose, it is necessary to remove, so far as possible, those deficiencies and handicaps which may have significance in the prisoner's general physical or mental make-up, and which when eliminated will have a favorable influence upon his social readjustment. A prison is not a medical clinic but those of us entrusted with the physical and mental care of its inmates must evaluate the therapeutic measures that will most benefit the prisoner. In the discussion of epilepsy as a prison problem, we are not concerned with the many phases of the convulsive states, as etiology, pathology, classification of types, or whether it is an organic disease or a functional disorder. Our chief interest is what we can do to assist those individuals suffering from such a condition so that their ultimate release for acceptable community living may be considered.

For years, epileptics have proven to be a definite problem in our attempted programs of medical rehabilitation. As you all know, the rôle of a confirmed epileptic in life is unsatisfactory and unfavorable for proper adaptation. Epileptics are usually self-opinionated and possess a conceit and assurance out of all proportion to their achievements. They are moody, and have periods of laziness and lethargy, which alternate with outbursts of hastiness and pugnacity. They are difficult to live with and are often useless as workers. The majority are unable to adapt themselves to social conditions, and, in consequence become self-centered, morbid and unsocial. They gradually develop conduct that is characterized by such selfish instincts as insatiable sexual appetites and a desire for power, wealth, et cetera. During periods of acute confusional excitement or transitory delusional states, they are apt to commit acts of violence. Epileptics are definitely unable to adjust to such particular circumstances as periods of stress or disappointment. They, therefore, very readily demonstrate criminal traits and every prison population

includes a rather high percentage of these cases.

In prison, our epileptics are both custodial and behavior problems. This is a factor of the greatest importance so far as the institutional discipline and morale is concerned. Confined epileptics of the criminal type are generally obstreperous, uncooperative, insolent, and their actions are impulsive and reckless. They are often hypochondriacs and are chronic attenders of the morning sick-call. The medical officers, working in the criminal field, have for years been trying out every known remedy and method in their effort to combat this undesirable type of disorder.

Merritt and Putnam,² of the Neurological Institute of Boston and Harvard University, published in the Archives of Neurology and Psychiatry, an article on "A New Series of Anti-convulsant Drugs Tested by Experiments on Animals." Familiar with the experimental work of these men on the anti-convulsant properties of sodium diphenylhydantoinate, we started a clinical study nearly a year ago on a group of our epileptic prisoners at the State Prison of Southern Michigan.

The background of sodium diphenylhydantoinate is best illustrated by a brief summary of the preliminary work of Merritt and Putnam.² These workers developed a standardized method of causing convulsions in experimental animals. A cat was placed in a specially constructed box and a metal plate was attached to the animal's head and another inserted in the roof of the mouth. A measured and timed current was sent through these electrodes and by this means the "convulsion threshold" was determined.

*Read at Foote Memorial Hospital Staff Meeting, Jackson, Michigan on January 10, 1939.

Using this method, a large number of drugs, including phenyl, cresyl, sulfonates, ketones and esters of barbituric acid and hydantoin were then studied regarding their anti-convulsant property.

Sodium diphenylhydantoinate stood out prominently; compared to phenobarbital, it exhibited the same property of increasing the "convulsion threshold" but entirely lacked its hypnotic effect. The clinical application of the drug was then initiated, and Merritt and Putnam,³ in their article in the *Journal of the American Medical Association* on "Sodium Diphenylhydantoinate in the Treatment of Convulsive Disorders" reported that in grand mal epilepsy 58 per cent of 118 patients were completely relieved, and in 27 per cent the attacks were markedly reduced in number. In the remaining 15 per cent little or no improvement was noted over the previous status under treatment with bromides or phenobarbital.

Sodium diphenylhydantoinate, an odorless white or cream-colored powder with a bitter taste, is soluble in water and slightly soluble in alcohol. Aqueous solutions are alkaline to litmus. No extensive pharmacologic studies have been published but we are informed that large single doses and frequent small doses were well tolerated by laboratory animals. Dogs having received 0.8 gm. daily (ten to fourteen times the human dose) for a period up to six months, continued in normal health and weight. As yet, it has not been determined how the drug is excreted.

The general attitude of the confined criminal epileptic is not desirable. He is soon stigmatized by his fellow-inmates as an "actor" or a "twister." He knows that uncontrolled seizures prevent his release on parole. He is also aware of the crowded condition of the State institution for the treatment of epileptics and that it may be years before his transfer there can be effected. His situation appears rather hopeless. This status is immediately reflected in his behavior and the incentive for improving his attitude is lost. All of our cases would illustrate how this factor aggravates the problem, but the following two will serve as examples:

Case 1.—A thirty-year-old white man was sentenced for armed robbery. He has an I.Q. of 110, and was formerly a

skilled tailor. Following an accident at the age of 23 years, he began to have 10 to 20 grand mal type of seizures monthly. He was studied at several hospitals and was discharged with phenobarbital therapy although this did not effectively control his convulsions. He was unable to hold a position and resorted to criminal methods as a means of livelihood. He was a definite behavior problem to us. He would not work, was in frequent difficulty with the other prisoners, and the usual corrective measures produced no beneficial results. On the basis of time served, he would have been eligible for parole consideration in May, 1937, but as his seizures were not controlled, this negated his release, and his condition and attitude grew progressively worse. During March, 1938, he had 17 grand mal seizures, and 5 in April when the present treatment was established. Since then, a complete control of his convulsions has been secured; his personality appears to have undergone a complete metamorphosis, and he has ceased being a behavior problem. He is now working at his trade as a tailor and is content to remain in custody until such time as the medical authorities believe that he can satisfactorily be released.

Case 2.—A twenty-three-year-old negro man, with a low I.Q., and with a history of convulsive seizures since birth, is in prison for burglary with an extensive criminal record. He has also been a serious behavior problem since here as he is surly, irritable, morose, characteristically unreliable, and segregation from the general prison group has been necessary because of his assaultive tendencies. Before treatment, he averaged one to two seizures each night. Since beginning treatment in April, 1938, with complete cessation of his convulsions, he has become more alert, responsive and coöperative. He is in the general prison group and is employed.

Half of our group of patients were started on treatment in April, 1938, and the remainder in June, 1938. Each group was hospitalized for a control study for several weeks. Sodium diphenylhydantoinate was then started—0.1 gm. three times daily before meals. All cases, except one, were controlled on this regime. This one case continued to have infrequent grand mal attacks at night and the dosage in his case was increased to 0.4 gm. daily divided so that he

received an additional kapseal (0.1 gm) at eleven at night. With the additional drug, there have been no further convulsions.

In addition to the two cases commented on, we have 12 more patients on this treatment. None of our patients had obtained any benefit from phenobarbital in large doses. All have improved on sodium diphenylhydantoinate therapy in that convulsive seizures have ceased and behavior and attitudes have improved. As yet, there is no indication that the effectiveness of sodium diphenylhydantoinate is lost or diminishes with time as does phenobarbital. In our cases, we have been able to reduce the dosage, in some instances, to one kapseal (0.1 gm.) a day, whereas in phenobarbital treatment it was necessary to increase progressively the amount given. It is also of note that the depression, which characterizes patients taking large doses of phenobarbital, is noticeably absent with the use of sodium diphenylhydantoinate.

Merritt and Putnam² recorded that the children in their group of cases were much better behaved and would do better work in school; further that this improvement must have been due in a great part to the freedom from attacks. It is also possible that the medication produced other changes in the activity of the cerebral cortex. Even though our number of cases is small, and the percentage of success has been higher than that found in the larger series, we are in full accord with this statement. As previously mentioned, our cases had not been free of seizures while taking phenobarbital and several were markedly depressed by its hypnotic action. In my own experience, other remedies for the control of convulsive seizures have not been as successful as sodium diphenylhydantoinate. This is, of course, said advisedly as it is realized that any new treatment requires thousands of cases, and several years of study, before a final conclusion may be reached. A few comparisons may be drawn. Helmholz and Moe,¹ of the Mayo Clinic, in their article "Results of 15 years Experience with the Ketogenic Diet in the treatment of Epilepsy" found that 47 per cent of a total of 409 patients benefited with this diet. These cases were children and were all carefully controlled. Dietary control is impractical and almost impossible in prison practice.

Pollock,⁴ of Chicago, reported that final

remissions occurred in 35 of 96 cases, or 36 percent treated with sodium bromide. In patients suffering from grand mal attacks only, the attacks were stopped in 43 per cent. He also suggested that early treatment and few previous attacks lead to more prompt and continued remissions. All of the cases in our series had attacks for several years before coming under our observation, and several had secured no benefit from bromide therapy.

Merritt and Putnam report that toxic manifestations occur in about 15 per cent of patients following the administration of sodium diphenylhydantoinate. The most frequent complaints have been dizziness, ataxia, tremor, blurring of vision and slight nausea. Cutaneous manifestations as a scarletiform eruption have been seen which, however, have disappeared promptly when the drug was temporarily discontinued. No serious toxic effects have been noted on the blood. In some few patients, the gums have been swollen and tender, but this is apparently not related to the amount of the drug taken or the duration of treatment. In our series, not one patient has manifested any of these reactions.

As previously stated, our primary interest in the establishment of this clinical study, for prisoners demonstrating convulsive seizures, was the evaluation of some therapeutic measures which might benefit the individual to the degree that he could eventually be released to the community with some degree of safety. Hypnotic drugs which depress this type of patient to a still lower psychologic level provided a greater stumbling block to progress than did the epileptic seizures, and only aggravated the existing behavior problem. Sodium diphenylhydantoinate appears to offer a new hope of assistance in rehabilitation because of its ability to control seizures in a large percentage of patients with epilepsy, without a hypnotic effect. The patients under treatment, and the medical officers in their charge, are very gratified over the results obtained. This data is being submitted to you for your information, and with the suggestion that further study of sodium diphenylhydantoinate in this type of case be encouraged.

Bibliography

1. Helmholz and Moe: Results of fifteen years' experience with the ketogenic diet in the treatment of epilepsy in children. *Proc. Staff Meet. Mayo Clinic*, 12:433, (July 14) 1937.

2. Merritt, H. Houston, and Putnam, Tracy J.: A new series of anti-convulsant drugs tested by experiments on animals. *Arch. Neurol. and Psychiat.*, 39:1003, (May) 1938.
3. Merritt, H. Houston, and Putnam, Tracy J.: Sodium

- diphenylhydantoinate in the treatment of convulsive disorders. *Jour. A.M.A.*, 111:1068, (Sept. 17) 1938.
4. Pollock, Lewis J.: Remissions of attacks of epilepsy treated with sodium bromide. *Jour. A.M.A.*, 110:632, (Feb. 26) 1928.

DIVERTICULITIS WITH SPONTANEOUS INTERNAL EVACUATION OF THE ABSCESS*

Report of a Case

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The etiology, symptoms and treatment of diverticulosis and diverticulitis of the colon have been well covered in the last decade by many competent authors. In this brief report of a single case of diverticulitis we bring forth the question of treatment only, with special reference to abscess formation following perforation; and we demonstrate the mode of evacuation of the abscess following conservative treatment.

In the more recent literature we find a few previously accepted facts. The age is usually between forty and sixty years. Sex does not seem to be a factor. Obesity and constipation are usually present. There are many complications associated with diverticulitis, of which perforation with abscess formation is the most common. The use of surgery following these complications often ends in the formation of a fecal fistula.

Huston states,⁵ that a large percentage of the diverticula are in the sigmoid. Abscess is the most common complication because perforation is seldom into the free peritoneal cavity, the pre-existing inflammation usually fixing the sigmoid to loops of the small intestine or to the parietal peritoneum, or to the anterior abdominal wall. Rankin⁶ also concurs in this belief, and adds that one should operate in acute perforation, abscess formation, fistulae, inflammatory obstruction, and malignancy. He states that abscess formation is not an infrequent occurrence and one which demands surgical intervention. Regional anatomy has much to do with abscess formation being localized. The upper end of the sigmoid has a very short mesentery, and is covered by peritoneum, only on its anterior and lateral aspects, in ninety per cent of the cases. This anatomical arrangement favors perforation outwardly, the pus and feces burrowing between the bowel and ilium toward the pelvis.

Conway⁷ also states: "Abscess formation is most common following perforation, and surgery is indicated in either perforation, obstruction, fistula formation, or abscess." In thirty-six cases he studied, the mortality

rate was twenty-seven per cent. Ellsworth⁴ and Synnott¹⁰ both sustain these views. W. J. Mayo,⁷ who gave us the first complete series, came to the conclusion early, that if an abscess forms it should be opened and drained, but a serious attempt should not be made at the primary operation to remove either the infected diverticula or the section of colon which contains them. Mayo,⁸ much later, substantiated his earlier belief when he stated—"If infection goes to abscess formation it should be evacuated, instead of waiting for spontaneous discharge, as the latter course tends to lead to the formation of fistula with its attendant evils." Eggers³ also believes that evidence of perforation, with abscess formation or peritonitis, is an indication for surgery. He stated that only diverticula in the sigmoid produced symptoms, and Lockhart⁶ in a series of forty-one cases found that thirty-six were in the sigmoid.

It may be seen from the above that it has been a generally accepted stand that, regardless of the fact that abscess formation following perforation is usually localized, and not free in the peritoneal cavity, surgery with drainage is usually resorted to. The mortality rate, however, is high, and a fecal fistula may be a resulting complication.

The following report illustrates what may occur when conservative treatment is instituted in a case of diverticulitis with abscess formation.

*From the Department of Surgery, Henry Ford Hospital, Detroit, Michigan.

DIVERTICULITIS—FALLIS AND MARTIN

Case Report

A fifty-two-year-old Greek insurance agent was admitted to the Henry Ford Hospital, September 7, 1935, complaining of abdominal pain.

History of present illness.—Two weeks before admission there was a sudden onset of acute gen-

associated with vomiting but he had no history of other symptoms referable to the gastro-intestinal tract.

Physical examination.—Examination revealed a middle-aged male lying comfortably in bed. The abdomen was soft, not distended, degree two ten-



Fig. 1

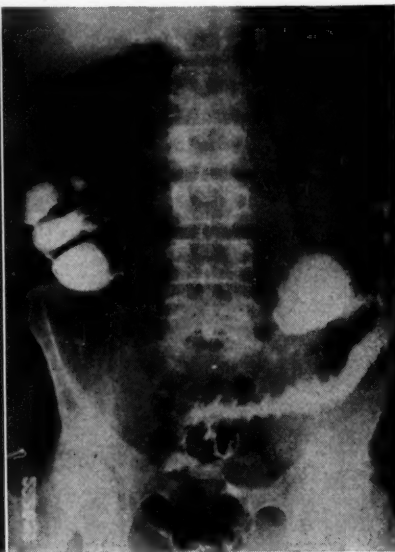


Fig. 1-A

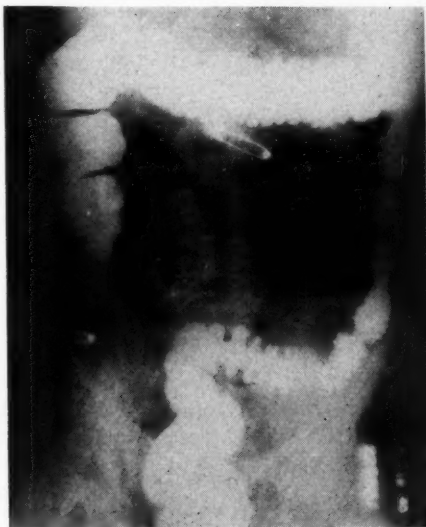


Fig. 2

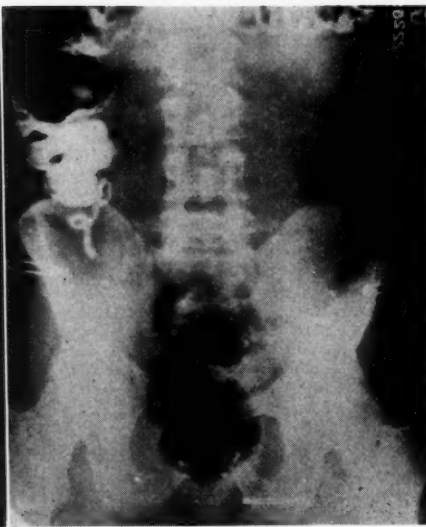


Fig. 2-A

eralized, abdominal pain which came shortly after taking food. The pain was quite severe, was accompanied by vomiting, and, though diffuse at first, settled in the left lower quadrant of the abdomen. The pain and vomiting persisted, and the following day he had fever and chills. These symptoms gradually subsided, but he remained in bed at home for five days. Subsequently, there was a continuous elevation of temperature with occasional chills, and recrudescence of the abdominal pain. One week after the onset, he passed a tarry stool; and on several occasions pus and mucous discharged from the rectum without much relief of the pain or distress.

History of past illness.—He had been subject to migraine for many years. The attacks were always

derness and spasm in the left lower quadrant, and a palpable mass in this area. Rectal examination was negative. T.P.R. 100°F-84-20. W.B.C. 25, 450, P.M.N. 82 per cent.

Diagnosis.—A diagnosis of diverticulitis with abscess formation was made. The passage of pus per rectum suggested that the abscess had ruptured back into the bowel, and was being evacuated in this manner.

Treatment.—Conservative, rather than operative, treatment seemed to be indicated. It consisted of liquid diet, repeated large doses of mineral oil, forced fluids and continuous hot fomentations. In addition, saline enemas were given three times a day, with the patient lying on the left side to promote gravity drainage.

Course.—Under this regime the patient's condition continued to improve and the mass in the left lower quadrant remained localized. Considerable quantities of mucous and pus were passed per rectum every day. After four days of treatment, the maximum temperature was 99.2°F. A barium enema was given and a contrast film was made. It showed many diverticula and a sinus tract which permitted the barium to pass from the lumen of the sigmoid and collect in a pocket near the iliac crest (Fig. 1 and Fig. 1-A). The following day, or five days after admission, the temperature became normal and remained at that level during the remaining ten days of hospitalization. A repeat barium enema and contrast film made nine days after the first showed spasticity of the colon with multiple diverticula, but the large pocket previously seen was not visualized at this time (Fig. 2 and Fig. 2-A). The patient was discharged from the hospital September 20, 1935, after fourteen days hospitalization. He was afebrile. The mass in the left lower quadrant had disappeared entirely.

After-History.—Four months later, a progress barium enema was done, but, except for persisting hypertonicity, the colon was negative (Fig. 3). In April, 1937, eighteen months after the attack, there was a mild exacerbation of the diverticulitis which responded favorably to four days hospitalization and routine conservative treatment.

Comment

This case of diverticulitis of the sigmoid colon with perforation and abscess formation presented an interesting study. The opportunity to actually visualize the mechanism of evacuation and resolution of the abscess was unique in our experience. On a number of occasions we have observed the complete disappearance from the left lower quadrant of a tumefaction due to diverticulitis but we have felt that the tumor was more of the nature of a phlegmon than of a true abscess formation. It is probable that in some of these instances internal evacuation of the abscess occurred. The possibility of such an eventuality indicates the value of conservative treatment in selected cases. Several factors may be pointed out as facilitating the recovery. One of the most important of these is the thorough daily flushing of the large bowel by repeated enemas attempting to aid drainage by this method. Drainage is further aided by the position of the patient and the use of gravity. A second important factor is the forcing of liquids and daily large doses of mineral oil attempting to soften any fecal masses in other diverticula, or near the site of perforation. The continuous application of fomentations to the abdomen is a recognized agent in the treatment of diverticulitis. Although

bismuth was not administered by mouth, it may have some benefit when used as an x-ray medium. It seems preferable to have the sacs and possibly the abscess cavity coated with a bland, non-toxic substance,



Fig. 3

rather than feces undergoing putrefaction. It is evident in this case that a well formed sinus tract allowed the pus to drain back into the lumen of the bowel, thereby emptying the abscess cavity, and favoring early resolution.

Summary

A case of diverticulitis with abscess formation treated conservatively is presented. The abscess ruptured into the sigmoid and was evacuated. A barium enema with contrast film permitted visualization of the abscess cavity and sinus tract leading into the sigmoid.

Bibliography

1. Conway, F. M., and Hitzrot, J. M.: Diverticulitis of the colon. *Trans. Am. Surg. Assn.*, 49:200-225, 1931.
2. Dixon, C. F., and Weber, H. M.: Diagnosis and surgical treatment of perforating lesions of the colon. *Surgery*, 2:411-423, (Sept.) 1937.
3. Eggers, C.: Diverticulitis and sigmoiditis. *Ann. Surg.*, 94:648-669, (Oct.) 1931.
4. Ellsworth, E.: *South. Med. Jour.*, 26:58-63, (Jan.) 1933.
5. Huston, H. R.: Diverticulitis of the colon in women. *Arch. Surg.*, 26:1111-1117, (June) 1933.
6. Lockhart-Mummery, J. P.: Diverticulitis and its surgical treatment. *Lancet*, 1:437-440, (Feb. 27) 1926.
7. Mayo, W. J.: Diverticulitis of the intestine. *Jour. A.M.A.*, 69:781, (Sept. 8) 1917.
8. Mayo, W. J.: Diverticulitis of the sigmoid. *Brit. Med. Jour.*, 2:574-576, (Sept. 28) 1929.
9. Rankin, F. W.: Diverticulitis of the colon. *Surg., Gynec. and Obst.*, 50:836-847, (May) 1930.
10. Synnott, M. J.: Diverticulitis. *Med. Jour. and Rec.*, 138:253-257, (Oct. 18) 1933.

CERVICITIS AS A CAUSE OF STERILITY, ABNORMAL BLEEDING, AND PELVIC PAIN*

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Inflammation of the uterine cervix is now generally recognized as a frequent cause of troublesome leukorrhea. Recently, considerable attention has also been directed towards its possible rôle in the etiology of carcinoma of the cervix. Emphasis on these outstanding points seems to have largely overshadowed other quite important effects of the condition. For instance, cervicitis may be a frequent and potent factor in sterility. It may also be a cause of abnormal vaginal bleeding as well as certain types of pelvic discomfort and pain.

The following study of fifty case histories from private practice is illustrative. These are records of patients whose cervicitis was treated for reasons other than the relief of leukorrhea or as a prophylactic measure against malignancy. In this sense they represent a series of consecutive cases. All were successfully treated by electro-cauterization. With only two exceptions, this was done as an office procedure, and without any kind of anesthesia for the most part. Many of these patients had extensive and marked involvement, and it is only fair to point out that the degree of success obtained is somewhat beyond usual expectations with cauterization. However, without going into a prolonged discussion of the relative advantages and disadvantages of other methods, it may be stated that cauterization being highly efficient, is sufficiently simple and so generally free of serious complications as to deserve, in my opinion, first place in the treatment of cervicitis. This is not to say that the technic can be acquired without experience or that the operation is free of all risk. It is definitely contraindicated in the presence of inflammatory disease since the pelvic condition may be made worse. Another danger, stenosis of the cervix, can occur but is a rarity provided care is taken to confine linear cauterization of the canal to the mucosal layer. Should deeper treatment be required, no more than one-half of the canal circumference should be cauterized at the first sitting.

Sterility

There were twenty-seven women with cervicitis who complained of sterility and who received no treatment other than cauterization for a period of at least six months after the first visit. Although these pa-

tients were advised to return for further treatment after six months, several delayed as long as one year.

TABLE I. RESULTS IN STERILITY PATIENTS WITH CERVICITIS

Treated by cauterization only, for at least six months		
Total patients	Became pregnant	No pregnancy
27	6	21

Table I indicates that sterility in six (22 per cent) of these patients was attributable to cervicitis. It is interesting to note that two successes were obtained in nulligravida. The twenty-one failures were later subjected to further investigation and treatment of both wife and husband, but only two of these women became pregnant so far as is known. However, the total of successes for the whole group (eight out of twenty-seven, or 34 per cent) is about as high as should be generally expected in a group of sterility patients. The interesting point is the important part played by cervicitis in these cases.

Bleeding

Abnormal bleeding in eleven patients was thought to be possibly due to cervicitis. All of these patients had marked cervicitis, but no cases of frank cervical polyps were included. In 5 the bleeding was in the nature of prolonged or excessive menstrual periods (menorrhagia), while in six the excessive bleeding occurred irregularly between as well as with menstruation (metrorrhagia). Results are given in Table II.

TABLE II. EFFECT ON ABNORMAL BLEEDING OF CAUTERIZATION FOR CERVICITIS

	Corrected	Little or no relief
Menorrhagia	2	3
Metrorrhagia	5	1
Totals	7	4

*From Harper Hospital, and the Division of Obstetrics and Gynecology, Wayne University.

The data tabulated indicate that one of the correctable causes of abnormal vaginal bleeding may be cervicitis. On the other hand, there were enough failures after cauterization to make it obvious that the condition may be present incidentally and not as a cause of bleeding. It is perhaps needless to mention that in all cases of cervicitis, malignancy should be ruled out, and this is especially important where there is bleeding. The least suspicion of carcinoma should demand the pathological examination of biopsy specimens, since other tests, such as Schiller's, are of little value in differentiating between inflammation and malignancy. In one instance, which might otherwise have been included in Table II, biopsy showed squamous cell carcinoma.

Descensus of the Uterus

In seven cases there was slight to moderate but still sufficient prolapse of the uterus to account for annoying, dragging backache and "bearing down" sensation when standing or walking. All of these patients had borne children, and there was marked cervicitis with edematous enlargement of the cervix to several times its usual size. Thorough cauterization reduced the size and hence probably the weight of the cervix, and presumably this was responsible for the fairly good symptomatic results shown in Table III.

TABLE III. CAUTERIZATION OF THE CERVIX FOR CERVICITIS IN PATIENTS WITH SYMPTOMS DUE TO SLIGHT OR MODERATE PROLAPSE OF THE UTERUS

Symptoms relieved	Greatly improved	Slight improvement
1	3	3

One of the patients with only slight improvement was operated on. The other two desired further pregnancies, and operative treatment was deferred. Inasmuch as any relief obtained in such cases is probably due simply to reduction in weight of the cervix and in no way remedies the underlying cause (relaxation), it is likely that those who were improved may require operation in later years. However, for those women in the child-bearing age or where for some other reason postponement of radical treatment is desired, cauterization would seem to be worthy of a trial.

Pain

Eight patients suffered with pelvic pain, backache, or both, for which no good explanation could be found other than possibly the cervicitis. On pelvic examination, these patients complained of tenderness and pain in the parametrium or in the region of the sacro-uterine ligaments, probably as a result of secondary involvement of these structures from the cervix. This resembles the so-called "pelvic toothache" spoken of by Curtis.

TABLE IV. PATIENTS WITH PELVIC PAIN OR BACKACHE

Results after cauterization for cervicitis		
Entirely relieved	Much improved	Little or no improvement
1	4	3

As indicated in Table IV, cauterization gave good results in a majority of instances. Relief in these cases was obtained within two to three months after the cervicitis was cleared up. Two of the three patients with insufficient improvement were operated on. One was found to have endometriosis of the ovary and uterus which required hysterectomy and salpingo-oöphorectomy. In the other, the left ovary was prolapsed and adherent in the cul-de-sac. Release of adhesions with suspension of the ovary gave a satisfactory result.

It will be noted that the total of the cases tabulated in the foregoing paragraphs is three more than the fifty studied. These three had more than one complaint and were therefore listed in two tables. One patient had menorrhagia as well as prolapse symptoms and was relieved of both. Another had failed to become pregnant during a period of three years, and also complained of irregular bleeding. There was no effect so far as sterility was concerned, but bleeding was corrected. The third was relieved of dragging backache and "bearing down" sensation due to first degree descensus of the uterus but continued to have some intermittent left-sided pain with persistence of the tenderness in the parametrial region.

Summary

Inflammation of the uterine cervix often has other significance than its causal relationship to leukorrhea and malignancy. Of twenty-seven sterility patients with cervicitis, six became pregnant after cauterization

of the cervix as the only treatment. The same procedure corrected abnormal bleeding in seven out of eleven cases. Presumably through the reduction in size and weight of the cervix by cauterization, four out of seven patients with descensus of the uterus re-

ceived considerable relief of symptoms. Among eight patients with pelvic pain or backache, thought to be possibly due to cervicitis, there was partial or complete relief in five instances after cauterization of the cervix.

EXAMINING THE INTOXICATED DRIVER

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GRAND RAPIDS, MICHIGAN

Driving under the influence of intoxicating liquor constitutes a legal problem of serious proportions today. It is the civic and professional duty of the physician to aid in stopping the drunken driver. It is not sufficient for a doctor to serve as a witness to severe intoxication; he must be qualified to detect slight deviations of the nervous system: motor, sensory, and mental; he should also include chemical tests for alcohol.

It is now well recognized that the man who is but slightly intoxicated is a greater traffic menace than the "drunk" in the older sense of the word. Cases will be shown illustrating this fact.

Published statistics vary as to the extent of drinking among drivers. The more careful the studies, the more drinkers reported. A study of 110 cases in Cuyahoga County, Ohio, by S. R. Gerber, revealed that 58.6 per cent of both drivers and pedestrians killed in accidents during 1936, excluding children under fifteen, had been drinking. In 45 per cent of the total number of cases, alcohol concentrations of more than 0.10 per cent in the body fluids were found. A blood-alcohol concentration of 0.10 per cent is used by Gerber as an intoxication borderline.

In the city of Grand Rapids, during 1938, there were 108 arrests for drunken driving. These people were all involved in accidents, traffic violations, or obviously faulty driving, and we have no estimate of the number of drinking drivers who escaped arrest.

The medical profession can aid materially in combating the menace of the alcoholic driver by improving standards of examination, thus obtaining competent and effective testimony. It is distinctly the impression of the writer that when the accused is confronted with the evidence produced by a proper examination he is more prone to plead guilty than when there is an absence of such evidence.

In some law-enforcing quarters the value of a medical examination is questioned, and as a substitute police officers are required to fill out a form quite similar to a medical

report, although they are allowed to call a physician at their discretion. The chief reasons for this arrangement are past experience with haphazard and incomplete medical examinations, resulting in unreliable testimony in court, and difficulty in obtaining a physician promptly.

No figures were found available for adequate direct comparison of results, as measured in terms of convictions, between cases examined and not examined by physicians. When one includes the intricacies of law-court procedures with a medical problem, it seems almost impossible to arrive at an effective statistical answer.

In Grand Rapids, nearly all the 108 cases in 1938 had medical examinations. Only fifteen of them also had blood alcohol or any chemical tests. Of the 108, seventeen were released because of insufficient evidence, and fifty-six of the remaining ninety-one (62 per cent) were fined.

An analysis has been attempted to compare the total number of cases fined for drunken driving during the year with those fined in a group of forty cases given a medical examination including a blood alcohol test by the writer. This group extended over a two-year period. It is of interest to note that during this time only three other prisoners refused examination as contrasted to the forty who consented. Of the forty examined, five were released, because of insufficient evidence for conviction. Thirty-

five were held, and twenty-six of the thirty-five were fined. If we are to speak in terms of percentage, twenty-six is approximately 74 per cent of thirty-five. Admitting that the number of cases is small, it may be of some interest to note that a greater proportion of the blood-tested drivers were fined.

Although the statistical proof of the superiority of physical examination plus chemical test over physical examination alone may be meagre, it is amply justifiable on scientific grounds, and is upheld vigorously by almost all recent writers on the subject.^{3, 5, 6, 8, 11} Objections to its legality have not arisen in my experience, because the consent of the accused is always obtained before witnesses. Refusal is so rare as to be unimportant.

In order that a physician may make a competent examination and render his opinion as to ability to drive, he should know how the courts decide the moot question of alcoholic intoxication. Reports of court definitions in various states,⁹ although they show wide variation, express a definite trend toward the attitude that slightly intoxicated drivers should be convicted. This report quotes Michigan courts as follows:

1. Intoxicated.

"When it is apparent that a person is under the influence of liquor, or when his manner is unusual or abnormal, and his inebriated condition is reflected in his walk or conversation, when his ordinary judgment and common sense are disturbed, or his usual will power is temporarily suspended, when these or similar symptoms result from the use of liquors, and are manifest, then, within the meaning of the statute, the person is intoxicated. It is not necessary that the person should be so-called 'dead drunk' or hopelessly intoxicated; it is enough that his senses are obviously destroyed or distracted by the use of intoxicating liquors."—*Lafler vs. Fisher*, 121 Michigan 60, 79 N.W. 934.

2. Under the influence of intoxicating liquor.

The Committee is unaware of any definition in a court decision.

With this legal attitude in mind, the physician should proceed with his examination, never failing to observe the following essentials:

1. Obtain permission of the accused to examine him, before witnesses, explaining that he, the physician, may have to testify as to the results of the examination.

2. Inquire and examine for any disease process present.

3. Perform a neurological examination

to discover any variation from normal in locomotion, stability, dexterity, and speed of reaction.

4. Make mental tests for orientation, memory, reaction time of thought, emotional disturbances.

5. Take specimen for a chemical test to prove presence and determine concentration of alcohol.

6. Keep a careful written record of all findings, in addition to police report.

Of the many neurological tests used for intoxication, experience has shown a few of great value, others almost useless. The pupillary reactions are utterly meaningless except to rule out tabes or other disease. The finger-to-nose test is seldom helpful—many subjects obviously intoxicated can do it admirably. Even the Romberg test is often negative when other evidence is sufficient to remove all doubt.

The first and most important test is the signature of the subject: When compared with his normal signature on his driver's license or other papers, it shows a high percentage of variation from normal, and it constitutes evidence as permanent and convincing as a moving picture.

The next important observation is the manner in which the subject performs normal actions, such as buttoning his clothes, which he does without thinking he is undergoing a test.

Tendon reflexes give us no help in deciding intoxication, any more than does a florid complexion. Both furnish the defending attorney a means of confusing witness and jury.

The ability to walk a straight line, turn and walk back on the same line constitutes a good test. However, many drunken drivers have been observed to stagger markedly when coming out of a cell, before the test is begun, and yet be able to walk the line. So, it is very important to observe the subject's actions aside from the actual examination.

One of the best tests is the ability to stand on one foot. It is rare that an intoxicated person can do it, but twenty successive men of all ages recently tested in this fashion during routine physical examination performed this test without difficulty.

It may be possible to devise oculomotor

tests, using one colored lens, for example. It is probable, however, that no matter what delicate tests are employed for intoxication, there will always be cases where some are negative while others are strongly positive.

A number of chemical tests have been used in Europe and America, studying the respired air, urine, saliva, blood, and spinal fluid. Schweisheimer¹² first reported blood-alcohol testing to determine intoxication. The blood alcohol test is apparently the nearest approach we have to the alcohol content of the brain at the time of the test. It has been shown experimentally to be very close to that of the brain,^{7,11} whereas the urinary alcohol may be and usually is 35 per cent higher than in the blood, and the lumbar spinal fluid is lower than blood- or brain-alcohol.

It makes little difference what test is used, but it may make a great deal of difference if *some* test is made. We may treat diabetes without any chemical tests, but no one would condone it on scientific grounds, and the additional legal factor is present in the alcohol problem.

It is frequently stated that chronic alcoholics have a tolerance for alcohol which enables them to consume larger quantities than a normal individual before they manifest symptoms of intoxication. This is only partially true. Kozelka, writing in the *Wisconsin Medical Journal* of November, 1935, quotes evidence of experimental work in animals proving that those habituated to alcohol absorbed and oxidized it more rapidly than normal animals. But (this is the important point) any animal, whether habituated to alcohol or not, demonstrated the same symptoms of intoxication at the various levels of blood alcohol. So the blood alcohol test is a reliable guide to intoxication at the time it is taken, regardless of whether the subject is a chronic alcoholic or an occasional drinker.

Authorities differ in establishing definite blood levels of alcohol as thresholds of intoxication, some placing the figure at 0.1 per cent, some at 0.15 per cent and others at 0.2 per cent. It is not probable that anyone will ever be able to prove a certain alcohol level as determining the lower limit of intoxication. It does seem safe to say that no one with a blood alcohol of over 0.2 per cent is capable of driving a car. None of the cases in the group of thirty-five with more

than 0.2 was considered sober enough to drive, and three under 0.2 (0.15, 0.15 and 0.18, respectively) were ordered held. The two with blood alcohol of 0.15 per cent pleaded guilty.

The blood alcohol test used in this series of cases was done with 1 c.c. of oxalated blood drawn from a vein (without using alcohol to clean the skin or to sterilize the needle or syringe). The blood is distilled in a water bath, the alcohol passing into 5 c.c. of a solution of potassium dichromate in 50 per cent sulphuric acid. The resulting acid color is compared with standards, giving a reading accurate within 0.02 per cent. This test is described by C. W. Muehlberger, Northwestern University, Chicago.

Evidence of intoxication must always depend chiefly on physical signs. No jury will ever accept chemical evidence alone, nor should they. It is to be clearly understood that the blood test is to prove that the man's disturbed faculties were disturbed by alcohol. But, first, it must be shown convincingly that his faculties were altered.

Several cases will be described where the blood alcohol test gave good confirmatory evidence.

Case 1.—C. H., male, aged forty-three. Signature—large, scrawling. Attitude—slightly antagonistic to examination, but agrees. Eyes—react normally. Dexterity—slightly retarded in buttoning clothing. Heart—normal, pulse 136, BP 170/110. Breath—alcoholic. Reflexes—normal. Station—sways slightly in Romberg. One-foot—fair on right, topples on left. Finger-to-Nose—done quickly, and finger touches nose. Gait—deviates from straight line several times; walks too fast. Number Memory—misses first group entirely, repeats second and third. Speech—normal. Blood alcohol—0.3 per cent.

This man and his friends were highly indignant over the decision to hold him for drunken driving. In this case the decision was delayed until the chemical test was finished, a matter of about thirty minutes. The following morning he pleaded guilty.

Case 2.—L. N., male, aged forty. Signature—irregular, but legible. Attitude—coöperative. Eyes—normal. Dexterity—not markedly abnormal. Heart—normal, pulse 100 BP 140/80. Reflexes—absent knee jerks. Station—sways slightly in Romberg. Gait—staggers slightly. Breath—alcoholic. Blood alcohol—0.15 per cent.

Here, the evidence was somewhat scanty. It was fairly obvious that he was not normal; it might not be easy to convince a court that he was not. So he was allowed to start his car. The officers were to observe his driving. Their observation was brief, however, as he ran his car against a wall twice in attempting to leave the station. He was held and pleaded guilty later.

Case 3.—H. W., male, aged thirty-eight. Blood alcohol—0.35 per cent. Examined by another physician.

This driver was injured slightly on one knee. He pleaded not guilty and had a jury trial. The defending attorney attempted to nullify the physical evi-

LARGE DOSES OF SULFANILAMIDE—MARTIN

dence of intoxication on the ground of injury to the knee, but was not able to question the validity of the blood alcohol test. The defendant was convicted.

Case 4.—W. D., male, aged fifty.

The examination in this case was not accurately recorded. He stated he was unable to write, so no handwriting was obtained. However, he talked in a confused fashion, his speech was blurred, and he staggered slightly. His blood alcohol test was 0.43 per cent. This evidence was introduced in court, and yet the jury acquitted him. It was a second-offense case.

Fortunately, the fourth case is an exception, and is only presented to show that jury trials can result in gross error.

Summary

1. Drunken driving is a medico-legal problem.
2. A high percentage of traffic accidents are caused by alcohol.
3. The number of drivers fined is slightly higher if blood alcohol test is made.

4. Suggestions are made as to method of examining for intoxication.

Bibliography

1. Hadley, Murray N.: Comments on traffic hazards. Indiana State Med. Assoc., (July) 1938.
2. Harris, Seale: Alcoholic beverages as factors in automobile accidents. The Mississippi Doctor, (Dec.) 1938.
3. Heise, Herman A.: Alcohol and automobile accidents. Jour. A.M.A., (Sept. 8) 1934.
4. Heise, H. A.: Drinking drivers. Milwaukee Med. Times, (Nov.) 1934.
5. Holcomb, Richard L.: Alcohol in relation to traffic accidents. Jour. A.M.A., (Sept. 17) 1938.
6. Hyman, Maurice: Diagnosis of acute alcoholism. Ohio State Med. Jour. (May) 1938.
7. Kozelka, F. L.: Medicolegal aspects of alcoholism. Wisconsin Med. Jour., (November) 1935.
8. Muehlberger, C. W.: The scientific estimation of alcoholic intoxication. Jour. Police Science, (March-April) 1930.
9. National Safety Council: Report of the committee on tests for intoxication. National Safety Council, (October) 1937.
10. Purves-Stewart, Sir James: Alcohol and the motor driver. Edinburgh, Med. Jour., (October) 1937.
11. Russum, Carl: Present status of tests for acute alcoholism. Nebraska State Med. Jour., (May) 1936.
12. Schweisheimer, W.: Alcohol content of blood. Deutsch. Archiv. f. klin. Medizin. Leipsic, CIX, Nos. 3-4. (Abstract) Jour. A.M.A., (March 1) 1913.
13. Selesnick, Sidney: Alcoholic intoxication. Jour. A.M.A., (March 12) 1938.
14. Smith, R. R.: When drunk? Mississippi Doctor, (June) 1936.

SPECTACULAR RESPONSE OF ACUTE GONORRHEA TO LARGE DOSES OF SULFANILAMIDE

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The following case is reported for two reasons: First, because of spectacular response; second, because of the stimulus it gives to thought of the very likely possibility of better and more uniform results from larger doses than have generally been used.

The literature indicates that the more consistently good results are obtained by those men using the larger doses. I believe it is this wide variability of dosage which has given rise to the marked disparity in reported results.

B. E., a white, American, married man, aged thirty-seven, presented himself complaining of urethral discharge and burning, admitting extra-

marital contact eight days previously. Examination revealed the characteristic reddened, pouting meatus with very copious creamy-yellow discharge. Smear showed large numbers of Gram-negative, intracellular diplococci. The patient was put on sulfanilamide (no other treatment) and told to return the following day. He returned twenty-two hours later, having taken, partially by mistake, 140 grains of sulfanilamide. He was slightly cyanotic, a bit nauseated, and felt (as he put it) "generally miserable," no evidence of other toxic symptoms. Examination at this time revealed tenderness of the anterior urethra; *but absolutely no discharge* either on inspection or stripping.

He was instructed to decrease his dosage to 60 grains daily for four days, then 40 grains daily for another week, which he did. There was never any recurrence of signs or symptoms, and seven months later the patient remains subjectively and objectively cured.

DEPARTMENT OF INTERNAL MEDICINE
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R. B., a white laborer, aged twenty, was admitted to the University Hospital on February 21, 1939, complaining of pain in the left knee, low back and both heels. He had been well until about four months prior to his admission when he began having a watery urethral discharge. This was examined by his physician but the patient did not know if gonorrheal organisms were found. He received urethral instillations and for four days oral medication (tablets), which made his "lips slightly blue," was given. The urethral discharge stopped after a few days but recurred a week later, for one day only, at which time it was purulent in character.

One month after the onset of his illness, pain and swelling of the left knee developed and shortly after this pain in both heels appeared which was much worse along the tendo-Achilles insertion into the os calcis. The pain in the knee disappeared after about two weeks, but recurred one month before he came here. One week before his admission, this joint had become swollen, warm to touch and more painful. The discomfort in the heels persisted from the onset. During the month prior to admittance he had pain in the low back, which was particularly bothersome early in the morning. He had no symptoms referable to any other joints or other systems. There had been a ten pound weight loss during this illness. There was no history of any similar illness in the past nor manifestations of the rheumatic state.

The physical findings were: T. 99.5° (F); P. 75; R. 25; B.P. 118/75. He was well developed and nourished but walked with short steps and a limp which favored the left leg. There were no abnormal findings in the spine, hips, or upper extremities. The left knee was moderately swollen and contained an increased amount of free fluid. There was some increased warmth about the joint and slight tenderness above the patella; complete extension was possible but pain accompanied this movement, and flexion was limited to 40 degrees during which procedure crepitus was demonstrable. A slight swelling was noticeable over the insertion of each tendo-Achilles; there was tenderness here and over the plantar surface of each heel. Dorsiflexion of each foot was limited and attended with pain. The tonsils were present but not enlarged or septic, and the teeth were in a good state of repair; the gums appeared healthy. The chest was free from adventitious sounds. The heart was not enlarged and no abnormalities were demonstrable. There were no palpable visceral enlargements in the abdomen. A left varicocele was present, but the prostate was not enlarged nor tender.

Laboratory findings: R.B.C. 5,200,000 per cu. mm.; W.B.C. 10,150 per cu. mm.; Hb. 85 per cent (Sahli). Differential: Neutrophils 64 per cent, lymphocytes 22 per cent, and monocytes 14 per cent. The platelets were normal in number and the red blood cells showed no abnormalities. The blood sedimentation rate was 1.1 mm. per minute (upper limit of normal 0.35 mm. per minute), and the hematocrit was 43.5 per cent. The blood Kahn reaction was negative. An occasional white blood cell and a few extracellular diplococci were present in the prostatic fluid. The urine was not abnormal. A blood complement fixation test for gonorrhea was reported as negative on February 17 and February 21. The blood culture and culture of the

prostatic fluid taken on February 23 were negative for gonococci. Thirty c.c. of synovial fluid were removed from the left knee on February 23. This was yellow and clear with W.B.C. 2,875 per cu. mm., R.B.C. 100 per cu. mm.; it had a differential count of neutrophils 16 per cent, lymphocytes 32 per cent, and monocytes 52 per cent. The complement fixation test for gonorrhea on this fluid was positive. The culture of this fluid was sterile.

Course in the hospital: He was given salicylates as indicated for symptomatic relief of his joint discomfort. On February 24, sulfanilamide therapy was started in doses of 2.0 grams (30 grains) every four hours day and night. Equal doses of sodium bicarbonate were given. His blood sulfanilamide was maintained at 10 mg. per cent \pm . It was planned to continue this therapy further, but it was discontinued as the patient was called home March 2 because of illness in his family. There had been both symptomatic and objective improvement at the time of discharge.

Discussion

DR. RICHARD H. FREYBERG: When this patient was considered for presentation today his findings were more pronounced than they are now. His left knee was swollen and showed signs of acute inflammation to a mild degree. There was more swelling posteriorly at the heels which were quite tender and there was increased heat. Notice that the patient has no push-off from the toes which results in the characteristic gait of Achilles bursitis. The history gives no proof of the etiology of his condition although it is quite characteristic—both knee and heel pain started shortly after the urethral discharge which certainly suggests a gonorrheal infection.

The usual history of changes in the joints due to gonococci is quite familiar to most of you. Usually within ten to twenty days after the initial infection, the patient has increased general malaise, aching of the entire body, and especially a generalized arthralgia. With this, there is usually fever which may be high, a leukocytosis and an increased erythrocyte sedimentation rate. After a short time, arthralgia is followed by a persistent true inflammation of one or more joints. A mono-articular arthritis is much less common than a polyarthritis. Sometimes there may be a latent period of months or years between the original infection and the onset of joint complications. It is more common, however, that exacerbations or re-infections account for the arthritis beginning late, after uncomplicated previous gonococcus infection.

Insofar as we know, the joint disease is a true metastatic infection with the gonococcus. In some stages of the illness, commonly when there is a fever, it is reported that the blood stream is infected with the gonococcus. In the studies by Keefer, however, at the Boston City Hospital, only

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three of 140 cases had bacteremia without endocarditis. There are certain other complications of gonococcal infection which are often found with gonorrheal arthritis. One of the most common is bilateral catarrhal conjunctivitis which occurs in about 20 per cent of cases. When this exists with joint disease, it should immediately suggest a gonococcal basis for the two diseases. The conjunctivitis practically always disappears without residual. Occasionally, there is an iridocyclitis, however, leading to permanent impairment of vision. Involvement of the tendon sheaths about the wrists and ankles is very common and often there may be abscesses. The patient just presented does not have true tendon sheath involvement, but has bilateral Achilles bursitis. The old saying that spurs of the os calcis are practically always due to gonococcus infection is losing ground. It is true that they are often caused by gonorrhea but I have seen many persons who have had spurs of the os calcis when there was no evidence of gonorrhea.

There is also a skin lesion that sometimes occurs called keratoderma blennorrhagicum. It occurs in only about 3 per cent of all cases and is more frequently seen in males. We have seen two cases during the past month. The lesion is primarily a keratosis of the skin which clears up within ten to forty days.

In regard to the joint involvement, let it be emphasized again, the evidence would indicate that in most cases the joint disease is a metastatic infection of the joint tissues by the gonococci. Keefer has reported two cases which came to autopsy; one had gonococci infected fluid with denuded synovial membranes and scar tissue replacement. The other case did not have infected joint fluid; the synovial lining of the joint capsule was quite intact and the fluid was not purulent. There was definite invasion of the subsynovial tissue with gonococci. The joint fluid is sterile in about 75 per cent of the cases. It is thought, however, that when the fluid is sterile, gonococci exist in the subsynovial tissue. The nature of the fluid differs, depending on whether or not it is infected. When sterile, it is usually a non-purulent fluid and the number of cells is quite small and only a few are of the polymorphonuclear type. In this patient there were about 2,000 cells per cu. mm. which is a small number for an abnormal joint fluid. From the clinical findings in this patient one would not expect the fluid to be purulent. Our cultures were negative.

The end results in the joint vary and (not considering treatment) depend chiefly on whether or not the fluid is infected and purulent. The sterile joint usually heals quite satisfactorily with very little residual. When the fluid is infected, the consequences are much more severe as joint destruction is much more extensive and rapid. As a result, permanent non-functioning joints may be produced within three or four weeks. True, bony ankylosis is said to be rare, but the knee joint, when

it is involved, often has limited and painful motion due to contraction of the capsule. The wrist notoriously becomes ankylosed rapidly as it is more commonly purulent. Bony ankylosis of the spine not infrequently occurs.

The immune and serologic reactions of these cases are very interesting. The complement fixation test is usually positive in the majority of cases within three to six weeks and sometimes as early as one week after the onset of infection. It may remain positive for from six months to two years after a clinical cure. The complement fixation test, however, is not 100 per cent reliable as the best figures indicate that it is positive in only about 85 per cent of the cases of proven gonococcal arthritis. There is, then, a 15 per cent chance that the complement fixation test may be negative. Occasionally, false-positive reactions occur. The serum complement fixation test is negative in this patient. I am definitely of the opinion, however, that he has gonorrheal arthritis and bursitis.

It would be helpful to know why arthritis occurs in only a relatively few persons who have gonorrhea. It is estimated that between one and two million persons are infected each year with gonococci but only 3 to 5 per cent of them develop gonococcal arthritis. Among the factors likely responsible for the limited occurrence of arthritis are variation in virulence of different strains of gonococci; differences in the local inflammatory reaction to the primary infection; variations in the bacteriocidal effect of the blood; and probably a difference in the bacteriocidal power of the joint fluid.

I have emphasized the diagnostic consideration for two reasons. First, it is extremely important to prove, if possible, the etiology in every case of arthritis. Many mistakes are made in statistical data because of incorrect diagnoses. Second, the treatment of gonorrheal arthritis differs distinctly from other types.

The treatment of choice is the proper administration of sulfanilamide. There have been varied reports concerning the value of this drug in gonorrheal arthritis. Dr. Bauer of the Massachusetts General Hospital recently made a careful study of the efficacy of sulfanilamide in this type of joint disease. He studied 14 proven cases, and four most probably due to gonococci. He reported that if sulfanilamide were given in large doses for a sufficiently long time, *all* the patients responded with clinical and bacteriologic cures. He recommended doses up to 0.15 grams per pound of body weight every twenty-four hours. In each patient, there was prompt improvement of the joints. Furthermore, if the medication is given in sufficiently large doses to cause a rapid elevation of the blood concentration of sulfanilamide to 10 mg. per cent or higher, evidence of cure, both clinically and bacteriologically, usually begins before the third day of treatment. Dr. Keefer has recently reported good results with

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smaller doses of this drug. We have had excellent results here with large doses comparable to those advised by Dr. Bauer. This patient will be treated with either sulfanilamide or neoprontosil.

Until two years ago, one was equally enthusiastic about fever therapy in treatment of acute gonorrheal arthritis as we now are for sulfanilamide, and it is true that the majority of cases can be cured with proper fever therapy. Killed typhoid bacilli injected intravenously is a satisfactory means of producing fever if the proper apparatus is not available. Deep roentgen therapy to the joints involved has been reported to be curative. In all of these types of treatment, satisfactory management of the genito-urinary infection is obviously necessary.

I think sulfanilamide therapy is the one of choice when it can be tolerated. It is necessary to have another satisfactory treatment available when the patient cannot tolerate this drug and fever therapy is my second choice. Recently, it has been reported

that when a cure did not result from sulfanilamide or fever therapy used independently, excellent results were obtained when they were combined.

DR. BERT M. BULLINGTON: Does the sulfanilamide have any effect on the complement fixation test?

DR. NOYES L. AVERY: Dr. Keefer, in his last article, discusses this and he says that it does not have any effect on the complement fixation test.

Bibliography

1. Coggeshall, H. C., and Bauer, W.: The treatment of gonorrheal and rheumatoid arthritis with sulfanilamide. *Jour. A.M.A.*, 111:2042, 1938.
2. Keefer, C. S., and Spink, W. W.: Gonococcal arthritis: pathogenesis, mechanism of recovery and treatment, *Jour. A.M.A.*, 109:1449, (Oct. 30) 1937.
3. Spink, W., and Keefer, C. S.: Latent gonorrhea as a cause of acute polyarticular arthritis. *Jour. A.M.A.*, 109:325, (July 31) 1937.
4. Keefer, C. S., Gonococcal arthritis, *Med. Clin. North America*, 22:839, (May) 1938.
5. Keefer, C. S., and Rantz, L. A.: Sulfanilamide in the treatment of gonorrheal arthritis, *Am. Jour. Med. Sci.*, (Feb.) 1939.
6. Myers, W. K., and Keefer, C. S.: Gonococcal fixation test in blood and synovial fluid of patients with arthritis, *New England Jour. Med.*, 211:101, (July 19) 1934.

MEDICAL ECONOMIC PROBLEMS*

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I wish to take this opportunity to thank the Program Committee for inviting the Guild to participate in this symposium.

Regarding the Medical Guild, may I state briefly that this is a small group of private practitioners, organized for the purpose of studying some of the problems in medical economics. These men have devoted considerable time, and not a little of their money to better certain conditions that prevailed in Wayne County. As a result of its work, the Guild feels that it is justified in continuing. Just how much good has been accomplished through these efforts, time only will tell. In attempting accomplishments, the Guild finds that its ideas are never right one hundred per cent. Their sincerity of purpose, however, has always been one hundred per cent. This group is firmly of the opinion that the most useful and influential unit in organized medicine today is an up and doing County Society. We further feel that through the effort of the officers, with the coöperation of the various committees as well as members, this Wayne County Society is rapidly establishing itself as one of the most progressive County units in the country. So much for the Guild.

As a preface to some of my later remarks, may I be permitted to sketch briefly for you some of the background, responsible for factors, that make a meeting of this nature necessary? There is nothing new in this picture and I am willing to risk the

odium of repetition, only because of the seriousness of the situation.

Medicine as an integral part of our civilization is afflicted with the same blight as has descended on Industry, Agriculture, and other groups in the community, namely: the economic breakdown. With this in mind it becomes evident that a successful remedy can come only as a result of united effort on the part of all. As disease affects some individuals differently from others, so does this economic illness affect the various groups, each having its own peculiar problem to deal with. One of the chief problems peculiar to medicine, is how best to re-establish the profession in the good graces of the public.

For the past several years medicine has been the target of attack on the part of small groups of socialistic and communistic minded individuals. They make good use of the press and many pink-tinted magazines, as well as other methods. Present economic conditions were a major factor, no doubt, in welding these groups into a goodly-sized, as well as, vociferous party. With determination and unity of purpose (of which I wish we had more) they spread their propaganda containing half-truths and untruths regarding the profession. Their efforts were so successful that as a climax they were able to have the great American Medical Association indicted by the United States Government as an organization in restraint of trade. Charges in the indictment accuse the profession with about

*This paper was read as part of a Symposium on Medical Economics before the Wayne County Medical Society, January 29, 1939.

everything from gross incompetency to outright dishonesty.

Contrast these attacks from Washington and other places with the recently published reports from the Surgeon General's Office, in which it is stated, that never before in the history of the country was the health of the citizens at such a high level. This paradox of reportorial effort is probably listed in Washington circles as a minor incongruity, but it does not require much thought on the part of any one to arrive at the conclusion that the whole business is a matter of political expediency, rather than medical necessity.

Regarding these differing reports from Washington, may I call your attention to an editorial which appeared in the *Medical News* of one week ago and from which I borrowed the idea? Editorials in both the *News* and the *Detroit Free Press*, following the same trend of thought, have appeared since the publication of this article. Our editor, Dr. Bates, is to be commended and congratulated on an editorial of this nature. Wide dissemination of this article could be made with untold benefits to the profession.

Gentlemen, this assault on medicine by governmental authorities is nothing more or less than a thinly-veiled subterfuge, for attacking the very foundation of government by a free people, and was selected as the likeliest wedge that could be inserted for the destruction of democracy. This is a critical period not only in the history of medicine but of the country. Now, as never before, is it absolutely essential that medicine be united against any individual, or group of individuals, who, either from without, or within, seek to destroy a structure which for the past seventy-five years and better, has built up and maintained the greatest system of medical administration the work has even known.

We are all too well aware of the encouragement given to a large part of the populace by a paternalistic-minded government. Due to long periods of government subsidy, many persons, including a goodly share of the undeserving, are no longer requesting aid for various commodities, including medicine; they are demanding them. Combined efforts of governmental, social and communistic groups, economic conditions, together with the apathy of the majority of the profession, rather than any breakdown in our present system of medicine, are responsible for most of the troubles which beset us.

It may appear strange to many that medicine has been silently extolling her virtues, while interlopers have ballyhooed her faults.

As an offset to the unfavorable position in which medicine finds itself as a result of all this derogatory publicity, the Guild believes that the best weapon of offense is "bigger and better" publicity. Reticence on the part of advertising in the past to anything that savors of advertising has been one of our chief weaknesses. We have taken too much

for granted regarding our status in the community. The public must be informed what it is to expect if the profession is allowed to deteriorate under governmental control. Stress must be placed on the inconvenience and suffering the public undergo, rather than the economic loss to the profession. Plans should be set up whereby the public can be informed as to what medicine has meant to them in the past, what it is doing for them at present, and what benefits it can expect in the future, from an unhampered profession. Few people realize that it was largely due to the advances in medicine that made possible our modern civilization.

In an effort to find out what the medical men in Wayne County thought regarding publicity for the profession, the Guild recently sent a questionnaire to the membership of some eighteen hundred, and received replies from more than five hundred. A fairly high percentage of returns for this method of inquiry. I present to you the questions with the results tabulated in percentages:

1. Do you favor a more aggressive policy of publicity and education by organized medicine in the present economic crises? (Yes 451, 95 per cent) (No 24, 5 per cent).
2. Would you favor that part of the time now given to radio scientific programs be utilized to refute misstatements concerning the medical profession by press and radio? (Yes 433, 92 per cent) (No. 34, 8 per cent).
3. Do you favor allocating a portion of your dues to educating the public with the advantages of the American system of medicine as contrasted with socialized system? (Yes 439, 94 per cent) (No 30, 6 per cent).
4. Do you favor more meetings where medical economics can be discussed? (Yes 416, 91 per cent) (No 43, 9 per cent).
5. Are you in favor of requesting the Michigan State Medical Journal to clarify all matters pertaining to medical economics and legislation? (Yes 460, 98 per cent) (No 4, 2 per cent).
6. Are you satisfied with the small amount of publicity appearing in the *Medical News* regarding matters pertaining to medical economics and legislation? (Yes 42, 9 per cent) (No 401, 91 per cent).
7. Should we engage on our medical programs proponents of socialized medicine except in open forums? (Yes 92, 21 per cent) (No. 339, 79 per cent).
8. Do you believe that all state and county cases should be made staff cases and the family physician be deprived of the case and the fee? (Yes 28, 6 per cent) (No 437, 94 per cent).

These figures are presented to the society not with the idea of recommendations or as a mandate from part of the organization, but as information which may be utilized to formulate publicity, should such be deemed advisable. Press and Radio publicity are desirable, but usually expensive. All avenues of publicity should be studied, and all groups having ideas along these lines should be heard, but action in this direction should be initiated without delay.

Our able President of the State Society, Dr. Luce,

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made a statement in one of his early letters in the JOURNAL something to this effect: "Payment of dues is no longer sufficient requisite for good standing in your medical society". No language at my command could better phrase an admonition to the laggard in the profession who contributes only his dues but reaps all the benefits. May I remind the apathetic members of our society that the time is past when shirking your duty is either fair to others, or just to yourselves. If we as doctors can rightfully expect help from others, we must first show them that we are able and willing to help ourselves, which brings me to a discussion of a plan for publicity which, based on the experience of the Guild, has proven to be productive of excellent results.

For years past the profession has had very little to do with the moulding of public opinion, partly because of the fallacy that we did not think we needed it, and partly because we have never apparently realized the potentialities for such purpose, which are right in our very offices. With the possible exception of the clergy, there is no group of men on earth who are closer to the people than the doctors. A smart politician is the one who realizes that if he can get close enough to the people, he can have any office he desires. We recommend using some of this psychology. We as doctors believe that our present system of medical administration, despite its faults, is the finest in the world. Any plan of publicity that does not convince the people of this is doomed to failure.

Why are the Guild members enthusiastic regarding the plan of direct advertising through the doctor's office to the patient? Our experience in the last election in helping to defeat the Welfare bill taught us something. In spite of official disapproval of our County Society, many members were very lukewarm in their opposition to this measure. The City fathers and other groups were for it and we had to deal with a hostile press. Incidentally, it is paradoxical that the press, which bitterly opposes Federal bureaucracy, should be found only too frequently lending its support to groups and measures, which are an integral part of such Federal programs. To make a long story short, we had pamphlets printed and distributed from doctor's offices, prescriptions were wrapped in them, and even milk bottles were delivered with this literature around them. Very little money was used for Radio time. How do we know that this system accomplished what is claimed for it? Well we have been given credit and recognition for our part in that campaign by those in a position to know, and incidentally the measure was defeated. My principal reasons for citing the opposition of the press and others are mentioned solely with the idea of conveying to you what powerful influences we overcame by this method.

Some of the chief factors which recommend this

plan to us are its low cost compared with other forms of advertising; it is readily applicable to doctors, dentists, pharmacists and certain other groups. It can be applied on a small scale such as our own county or several counties can combine.

In our opinion it has national possibilities. Sporadic efforts along these lines have been attempted but nothing in the form of a well-organized campaign on a large scale has been attempted to my knowledge.

It might be well to make a few suggestions that would assist in putting this plan to operation. First, we feel that an advisory board composed of doctors, dentists, pharmacists and other interested groups, should be appointed. The matter should be placed in the hands of a competent advertising concern. The pamphlets should be in series. Regarding this particular feature, it is not sufficient that pamphlets be placed on the waiting-room desk. If we are to achieve the maximum results from this method, the pamphlets must be given to the patient by the doctor himself. The follow-up series is not only to present our side of the story but to avoid handing out the same material week after week. Visualize, if you can, the potentialities of a system embracing approximately one hundred thousand doctors, sixty thousand dentists, and I don't know how many drug-stores, passing this material directly to the public. Another big advantage of this plan is that while press space and radio items are available to those of our opponents who can afford to purchase the same, the avenues of outlet from the doctors, dentists, et cetera, are closed to all but ourselves.

Just a word concerning policies, a subject abhorrent to the average doctor, but times have changed much in the past ten years and we can no longer sit idly by and be lulled into a sense of security by tunes from the old caliope.

Guild members have found that there are men in public life, regardless of party affiliations, who are eager and willing to do what is right for the people. Far better that we trust duly elected officials with our affairs than any type of bureaucracy. Sympathetic officials are good allies.

Our troubles did not descend on us in a day. Neither must we expect to be rid of them over night. Do not underestimate the ability of our opponents in the Government service, they have brains and intelligence and OUR money with which to carry on. Whether or not we like it, we are in a long drawn-out battle between the forces of sociologic bureaucracy on one side and American democracy on the other. Let there be no doubt as to where we stand. The world is aware of the great fight that medicine has waged against disease. Let us now show America that we as physicians and citizens can battle with the same vigor for our sovereign rights. Quitters are never winners, and it is not too late for action.

THE JOURNAL

OF THE

Michigan State Medical Society

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APRIL, 1939

*"Every man owes some of his time to the up-
building of the profession to which he belongs."*

—THEODORE ROOSEVELT.

EDITORIAL

PROGRESS IN THE CONTROL OF CANCER*

THE unknown horizons of cancer are being pushed back farther and farther through the three closely related activities of clinical diagnosis and treatment, research, and education. Each of these is making significant contributions to a wider understanding of the problems of malignancy. One of the most interesting aspects of the entire cancer problem is that practically every bit of additional information about the

*This editorial was written by Dr. F. L. Rector, field representative of the American Society for the Control of Cancer.

disease adds to the hopefulness of its eventual control as a major cause of death.

Realization by the medical profession that the diagnosis and treatment of cancer is no longer a one-man problem is offering much additional hope to the cancer patient. The value of organized tumor clinics in general hospitals—nearly three hundred of which are now functioning—is bringing a better appreciation of the complexities of this problem in modern medical practice. These clinics offer help to the family physician who is often denied access to necessary diagnostic and therapeutic facilities; while to the cancer patient it gives the benefits of group consultations with those having the widest experience with malignant disease.

An additional advantage of the tumor clinic is its usefulness as a center for graduate study for all physicians within its sphere of influence. This is possible largely because of the increased number of cancer patients seen in comparison with the relatively small number of such patients seen in the average general hospital. The value of comparative methods of treatment can be established much sooner where large numbers of patients are seen. All in all, the tumor clinic offers the maximum of good service to the cancer patient and excellent opportunities for education of the physician.

In the field of research some of the most significant contributions to our knowledge about cancer are being made in the sciences of biology, chemistry, physics, and genetics. The rôle of certain chemicals—now numbering approximately fifty with more being added at frequent intervals—in the etiology of cancer is now fully appreciated. The knowledge that cancer is primarily a biological problem concerned with the vital function of cell growth is stimulating research workers to focus attention on the cell to identify those forces responsible for malignant changes in the cell.

Cancer research, today, is concerned more and more with the chemical nature of cell activity and inquiry is being actively pushed in the field of biochemical investigations. Wide researches are under way to find those chemicals with the most potent influence on normal and abnormal cell activity.

The physicist is extending knowledge of irradiation therapy, with the result that in-

creasing use is being made of this therapeutic agent in the treatment of malignancy both for curative and palliative purposes.

Studies in genetics have been confined largely to work with laboratory animals. The further this work progresses the more evident it becomes that vastly improved records of human cancer are essential if we are to know more accurately the influence of heredity on cancer development in the human race. Because the great majority of marriages bring about a dilution of the probability of transmitting cancer to offspring through susceptible parents most geneticists are unwilling to go beyond recognition of the possible transmission of susceptibility to cancer in succeeding generations. Even though cancer may be proved to be conditioned by heredity, the rapidly expanding appreciation of the value of early diagnosis and prompt treatment will continue to offer much hope to the cancer patient and will more than offset such handicaps as heredity may impose.

The greatest advance in cancer education of the public has been the organization of the Women's Field Army of the American Society for the Control of Cancer. This organization now extends to forty-six states, of which our own was among the first to be included. Its objectives are to bring to the general public the known and accepted facts about cancer and methods for its control. The presentation of these facts by the medical profession to hundreds of audiences has caused thousands of persons for the first time to seek examinations to determine their freedom from this disease. It has caused thousands of others to replace their unreasoning fear of the disease with an intelligent caution toward this question.

The value of this educational program cannot be fully measured, but the medical profession is in a position to know better than any one else the results of this program as their patients come in increasing numbers for attention to their questions about this disease. Success of this educational work rests in large measure on full cooperation by the medical profession. As the objectives of periodic examination and recognition of the early signs of cancer become better understood, a fuller cooperation by the physician will be expected.

The outlook for controlling the increased number of deaths from cancer in this state

is becoming brighter. That fortunate time will be hastened in proportion to the cooperation that is developed between the patient and his physician. Education will reduce the waiting period by the patient in seeking professional advice and service. The physician will make his contribution by not delaying in diagnosis and treatment once the condition is brought to his attention.

GERIATRICS

THIS word presents no difficulty to the physician who has included Greek among his premedical subjects. *Geras*, old age, and *iatros*, physician. Geriatrics is the opposite to pediatrics, which should be more correctly spelled "pædiatrics." The reader will pardon this display of erudition. We are pleased to present a paper on the subject of geriatrics, by Professor Carl D. Camp of the University of Michigan. Considering the fact that the number of old people is gradually increasing, with special ailments incident to age, a paper on the subject of geriatrics is long overdue. We have never read a clearer or more concise presentation of the subject than Dr. Camp's paper.

With the placement of the retirement age from sixty up, particularly in occupations in which the worker draws a salary, a great many men who are physically and mentally capable are thrown out of employment. Dr. Camp quotes from the report of the Committee on Population Problems to the National Resources Committee, that in 1930 there were about 12 million children under five years of age and six and a half million persons over sixty-five years of age; and if the present trend continues, by 1980 there will be six and a half million children under five years of age and twenty-two million over sixty-five years of age. Dr. Camp makes an interesting distinction between the mental age and the chronological age of this group. To persons who are in independent occupations such as most of the professions have been up to the present time, the difficulty is not so great, inasmuch as the period of retirement from actual work is a matter for the individual himself to determine. The seventh decade of life in any event should be one of change in human relationship. Even those in independent occupations, if they are wise, will avoid taking on new obligations and will adjust themselves to habit,

which is a great economizer of physical as well as mental strength. Happy is the man or woman who has cultivated a hobby; something from which he may derive satisfaction irrespective of any income connected with it. Longevity, Dr. Camp goes on to say, is largely a matter of heredity and that in turn depends upon the quality of arteries which one has inherited. The old saying, that a man is as old as his arteries, is one that has not been revised with the progress in modern research. The octogenarian, when asked, is prone to attribute his length of years to some wisdom on his part, and is apt to ascribe it to some deliberate habits of life, as old Adam in "As You Like It."

"Though I look old, yet I am strong and lusty:
For in my youth I never did apply
Hot and rebellious liquors in my blood,
Nor did not with unbashful forehead woo
The means of weakness and debility;
Therefore my age is as a lusty winter,
Frosty, but kindly."

Dr. Camp goes on to indicate the changes that accompany the aging process. He gives wise council on the subject of blood pressure, which causes so much anxiety not only to many aged patients, but to their physicians as well. We will not enumerate what Dr. Camp has so well done.

The literature on pediatrics is voluminous; that on geriatrics is very meager in comparison. Here is a fertile field for clinical study and research.

THE RÔLE OF MEDICAL EDUCATION AND THE PHYSICIAN IN MATERNAL HEALTH

THE important rôle played by the physician in the Maternal welfare of this commonwealth, is very nicely revealed in the recent survey of Maternal Care in Michigan, which was carried out by the Maternal Welfare Committee of the Michigan State Medical Society.

The survey revealed that ninety-seven per cent of the babies born in Michigan during the period of this survey, were delivered by physicians. Among the 21,568 births were 394 or 1.8 per cent who were confined by doctors of osteopathy, and about an equal number by persons of unknown identity, including midwives and nurses. This finding firmly establishes the responsible position held by the medical profession in this one phase of public health.

Approximately three-fourths of the phy-

sicians who attended confinements, during the period of this study, were affiliated with the American Medical Association, and thereby, with the State and their local County Medical Societies. This fact emphasizes the leadership which the State Medical Society should exert in behalf of Maternal Health.

Fifty-six per cent of the births in the study were attended by graduates of the two medical schools in the State of Michigan. Thirty per cent of the birth attendants were trained at other medical schools, most of them large Universities located in neighboring states. Less than two per cent of the birth attendants whose records were available in the American Medical Association Directory, were graduates of schools of unacceptable medical standards. About three-fourths of the births in Michigan are attended by medical graduates of the past twenty-five years.

Nearly half of the physicians in Michigan practise Obstetrics. Only about five per cent deliver more than twenty babies per quarter. About one-fourth of the physicians of the State deliver eighty-five per cent of the babies.

The quality of maternal care in Michigan, obviously revolves entirely around the physician. Postgraduate education is the logical means of enlightening the practitioner upon the advances in obstetrical care. Public Health programs for the improvements of obstetrical care, will be most effective if centered about the medical profession, as the producers of that care.

Since graduates of two medical schools in the State deliver more than half the babies in Michigan, the importance of the teaching in these institutions becomes more apparent. Through their curricula, these institutions can immediately exert a great influence upon the type of obstetrical care received by the women of Michigan. The Michigan State Medical Society, through its postgraduate work in obstetrics and the two medical colleges, through their undergraduate teaching, are the two leading factors which will most quickly influence maternal welfare in Michigan, and should receive the hearty coöperation of local physicians.

HAROLD A. FURLONG, M.D.

Member, Committee on Maternal Health, Michigan State Medical Society.

PREMEDICAL EDUCATION

DR. FOSTER KENNEDY of New York has written an interesting letter to the *New York Times* of February 12, on the subject of premedical education. The plea in Dr. Kennedy's letter is for premedical training that would lead to a more cultural background than that prescribed at the present time. Instead of the present four year medical course, Dr. Kennedy would increase the medical course to five years, carrying the humanities *pari passu* with medical education. He says:

"A student of pathology might be a better student of pathology if he were required to read, perhaps, Henry Hallam's 'History of the Middle Ages' in the same semester. And an appreciation of fine poetry is not incompatible in the same evening with reading Cecil's 'Textbook on Medicine.' To have the two running alongside each other might help to diversify thought and stimulate ideas in each."

We heartily agree with Dr. Kennedy. The disposition to be a doctor and nothing else is too strong with the average medical student and frequently the premedical course is perused with the feeling in mind to get it over and to pass the necessary examinations so as to enter upon the study of medicine. If medicine is to be a learned profession, it should include cultural subjects as well. The omission, or making optional Greek and Latin in premedical work, has been most unfortunate. True, the student in the time allotted may not acquire fluency in reading Virgil or Horace or Homer's Iliad, and equally true these works may be obtained in translations that are much superior to those any student could hope to make; there is something, however, in the sentence structure of these languages and in the study of words which is entirely lost in a translation. As a recreation, if for no other purpose, a lifelong study of history and literature, though it may be desultory and sporadic and not indulged in to improve one's mind, is one of the best antidotes possible for prolonged application to medical study. The mind cannot rest by simply becoming inactive. Mental rest comes best from change in subject.

Dr. Kennedy goes on to say that a physician may be a "cultivated" man without the present obligatory B.A. course. To this we heartily subscribe, and go farther, namely a man may hold a B.A. degree without being cultured. Whether a man is "culti-

vated," to use the expression of Dr. Kennedy and also the *New York Times*, depends upon his reaction to what he reads and studies. If it is perused in the spirit of intense interest, it will become part of himself. The late Dr. Osler, who had no university degree apart from his M.D., was one of the most erudite and cultured men in the medical profession or indeed in any profession. He loved to study and graduation day to him was in the true sense "commencement" and not the date of completion of his education. We, therefore, heartily endorse Dr. Foster Kennedy's plea to continue the humanities along with medical work.

AS THE LAYMAN VIEWS IT

MEMBERS of the medical profession are sometimes at a loss to understand the attitude of the lawmakers, not only in Michigan, but in other states as well, towards the healing cults. The attitude, however, on the part of the legislator is one of fair play. He tries to view all those who essay to take care of the sick in the same light. To him, there are schools of medicine, so-called, and in all fairness, each should be given an equal opportunity with the others.

The members of the regular medical profession, however, have a different view. It is with them a matter of fair play to the sick and not to those who would aspire to care for them. The doctor is not and has never been reconciled to the idea of "schools" of medicine, interpreted as the various healing cults. The state at large has officially disavowed a belief in cultism. To be more specific, there are no state endowed schools or colleges for the purposes of teaching the tenets of any cult. The state recognizes only scientific medicine. Cultism in the matter of the care of the sick should be discouraged in every way, in the interests of the afflicted who are not in a position to evaluate the merits or demerits of healers.

The regular medical profession has raised its own standards. It has made use of such collateral or ancillary sciences as chemistry, physics, biology, and has built up a body of knowledge that requires not only years of special training but one to several years of practice before the candidate is deemed sufficiently qualified to attend the sick. If there is any unfairness, it consists in compelling

certain young men and women to fulfill the state requirements of medical education and experience and allowing others to practice after attending cult institutions, most of which, so far as we know, are outside of the state. In fairness, every aspirant to the healing art should be compelled to qualify in the best state recognized schools, of which two are located in Michigan.

The absurdity of cultism is seen if we could apply the term to law or to engineering. Imagine having a deed to property written according to the tenets of a certain legal cult, or the building of a bridge according to the peculiarities of a certain engineering "cult" with some special theory of mathematics. There is only one medicine, that which is taught at the University of Michigan or Wayne University Medical School, or in similar institutions in other states, or highly endowed independent universities throughout the land.

KEEP IN TOUCH WITH YOUR REPRESENTATIVES

WHAT mercantile house or industrialist would hire or appoint a person to act as his agent and not keep in close touch with his work from time to time or at frequent intervals? The delegates of the Michigan State Medical Society are your immediate agents. Next to them are the members of the council of the society. Do you, reader member, consult with the councillor of your district frequently, or write him expressing your approval or disapproval of his course of action, or, having elected him, do you dismiss the matter of representation from your mind until the time comes to re-elect him or to elect a successor? Would you not get better service if you kept in touch with him and registered your attitude from time to time?

You are represented in a professional way by the councillor of your district who endeavors to carry out the policies of your house of delegates. You are represented in the broader field of citizenship by the persons you elect as members of the council of your city, or county or your state legislature or your national senate and house of representatives. They may seem to you further away than your medical society representatives. Their influence, however, is exerted on your civic and economic inter-

ests and to a very large degree on the health interests of the local municipality, the state and the nation. They are human and appreciative of letters discussing your and their common interests. How often do we elect a member to the state legislature or to Congress and that is the end of our interest, until election comes around again? Would it not be the better part of wisdom to keep in touch with him throughout the session, let him know you approve of his conduct (if you do) or discuss in a dispassionate way anything with which you disagree, with suggestions and well thought out reasons for your own view?

We believe any honest and thoughtful representative would welcome your advice. He might not always find it expedient to follow it. The fact, however, that you registered it would have some effect. Time spent in writing a brief, clear letter is time well spent.

THE FAMILY DOCTOR

The family doctor has always been heralded the adviser and counselor of his patients on many subjects. He has always been the trusted confidant. The *Saturday Evening Post*, in an article by J. P. McEvoy, makes the following note in its record of the development of Shirley Temple:

"All of Shirley's earnings are put in a trust fund for her benefit when she grows up. I am making enough myself, so I don't have to touch any of it." And then Mrs. Temple continued: "You know, Bernstein wanted to handle Shirley. He came over here to the house with Mrs. Coogan one day, and walked up and down the living room waving a check for half a million dollars in my face. He told me he had just got this for Jackie and we ought to let him handle Shirley, because we didn't know anything about the picture business and we would certainly be cheated if we didn't let him take care of us.

"Practically every agent in town had been after us, and we didn't know which way to turn. Bernstein talked and talked until we were dizzy, and then, in desperation, we called up our family doctor and asked him to come over and advise us, because he was the only professional man we knew. He has been advising us ever since."

"You have no agent?" I was incredulous. Every one has an agent in Hollywood, even the agents.

"No agent."

I made a rapid calculation. Ten per cent of the Temple earnings saved. Nice going for a family doctor.

"Of course, we have a lawyer now who helps us but weren't we lucky to have such a sensible doctor?"—*Jour. A.M.A.*, July 23, 1938.

JOUR. M.S.M.S.

Suggestions

Dr. Robert Monfort of Onaway, Michigan, sends in the following suggestions in regard to methods in daily practice. The reader may have others that may be of interest and value to other readers. Brief suggestions on any subject incident to daily practice will be gratefully received for this department.

Five Minute Urinalysis

Repeated observations of the average physician's routine of office urinalysis and the fact that the doctor or his nurse each with valuable time to sell frequently spend all too much time stumbling hit and miss fashion through that simplest and most dreary of laboratory procedures, have prompted this note. If you have slipped into the "albumin and microscopic, please," "just an albumin" or "sugar on this one" habit, the following will interest you for it demonstrates that reasonably complete qualitative urinalyses may be performed in the same time that it takes to do a simple sugar estimation.

Two burners are required, together with some form of support for a test tube holder. For this latter, I use an ordinary pasteboard box in dimensions about 9 by 6 by 6 inches, stood on end with two of the end covers removed and the other two strapped down lightly with adhesive. The handle of the test tube holder is slipped between the edges of these latter, which effectively support the holder, at the same time pointing it at a slight angle so that when the tube is in place, it slants away from the box, thus preventing scorching of the latter by the Bunsen or alcohol flame which is to be placed below the supported test tube. Better standards may be purchased, of course.

The routine: Three tubes are taken in hand. Into the first, an ordinary test tube, goes Benedict's, urine and two glass beads; the second and third, one a centrifuge tube, the other a specific gravity tube, are partially filled with urine. The centrifuge tube is dropped into its cup and the apparatus turned on. The sugar tube is snapped into the aforementioned test tube holder and a flame brought beneath it. A little practice enables one to judge proper height of flame and distance from tube. The specific gravity is taken on the urine in the remaining tube and a piece of litmus added for reaction. The top urine in this same tube is now brought to a boil over a second burner, acetic added and the boiling repeated (for albumin). Microscopic examination of the centrifuged specimen is done at this point and if a nurse is doing the work, the doctor is summoned to check the findings. By this time, the sugar tube has boiled the required five minutes and may be read. The whole procedure has taken a little over five minutes.

Advantages: this routine is of value only in the tiny office laboratory where, as a rule, only one urine at a time is examined. The temptation to do incomplete examinations is taken away. For the very thorough physician who, however, only does

a few urinalyses during the day, it saves him from putting them off till night when he "has time" (but is most tired). The completed urinalysis is always awaiting him when he has finished his clinical examination of the patient. The necessity for the continuous and penny consuming water-bath (vital in large laboratories) plus many of the boring aspects of the routine, is obviated.

Sanitary Tourniquet

Meticulously sanitary though he may be in every point of office routine, the physician still uses the unsanitary rubber tube for tourniquet purposes. He may be as clean as his barber and not offer the same headrest to every patient, nor may he use the same tongue-blade on all comers, but he will wind the same rubber tube uncleaned about dirty arms, and clean arms, all day long without qualm of conscience.

Further, rubber tubing hurts when it is applied. Have it tried on yourself. Fat rubber tubing (as suggested recently by Williams in *J. Lab. and Clin. Med.*, 23:1296, 1938) is decidedly more comfortable, and has a number of other advantages, but remains unsanitary.

Adhesive is one answer—one-half-inch adhesive. The *middle* of a strip two or three inches longer than the circumference of the arm is applied, gummed side *away* from the skin, to the *back* of say the left arm. The end nearest the body is grasped with the right hand, the other end with the left hand. Thus the hands are crossed. Tighten the band till desired constriction is produced, with a twist of both wrists, the ends are turned over so that the adhering surfaces oppose and contact the smooth surfaces of the strip already around the arm but with about one inch of the uppermost end remaining free. A little tug on this free end releases the tourniquet.

The procedure is absolutely without discomfort. The adhesive does not slip. The veins, as with the use of flat rubber tubing, are more prominent. The added expense is infinitesimal. The time required for application is reduced. The ends and middle of the tourniquet never flop down onto the field of operation as often happens with rubber tubing if hurriedly applied. Psychologically, the sanitary feature is sound.

PERPETUAL MOTION

You tell me there's nae sic a thing,
As motion that's perpetual,
And my apology goes tae him
That thinks he kens that ritual.

I ken that you and he as well,
Have studied science fairly,
And ye may think I'm in a spell
If I dispute ye sairly.

Noo, I'm no for grieving ye too much,
Nor to your eyes hot tears tae bring,
But, come tae me all ye and such
That thinks there is nae sic a thing—

I'll show ye a' a wee machine,
A thing I call my "spindle,"
It holds my bills as they come in
With plenty more to mingle.
I pay one off, I put one on,
A constant move and jingle,
It's on and off, and off and on—
Perpetual motion on my spindle!

WEELUM



YOUR ESTATE

Its Accumulation, Conservation, and Distribution

BY HENRY C. BLACK and
ALLISON E. SKAGGS

INTRODUCING the subject of estates in the next few issues we will recount some of our experiences in conserving and liquidating a number of doctors' estates, call attention to commonly neglected essentials, and, from some of the conclusions impressed upon us, attempt to emphasize the important procedures that may be of benefit to our readers. We hope thus to help bring about a realization of the problems that exist, and cause each individual doctor to seek the solution that best applies to his own particular case.

From time to time brief articles have appeared in these columns, stressing the need for business-like thought and action in trying to attain the ultimate of satisfaction from what is termed "a successful practice of medicine." In these articles simple routines to improve income have been described; costs of maintaining a practice in the different income groups have been compared; investments and life insurance have been touched upon briefly; and liquidations and partnerships have been discussed.

However, in the past few years our attention has frequently been called to the problems involved in conserving and distributing the estates that so many doctors are busy accumulating. Our experiences while assisting in the liquidation of a number of doctors' estates, and while helping in the planning of a number of others, seem to indicate that we might offer suggestions in such matters which, if followed, might be of considerable value.

In considering the estate (property and possessions) it must not be overlooked that we are referring to something that already exists; that our plans for it are today's problem, not tomorrow's; and that during the accumulation period thought should be given not only to the possible distribution in the event of death, but to the probable requirements during life. This necessitates an accumulation that will accomplish either

purpose equally well, and in addition this accumulation of values must be conserved with both ideas in mind. Thus we believe that the building of the estate should be done conservatively so that a sudden drop in income will not cause immediate financial embarrassment. It is usually unnecessary for investments to be jeopardized by heavy liabilities which, if not paid promptly, will wipe out the equity entirely.

How many doctors have worked and saved throughout a number of good years only to find that, instead of being able to take things a little easier and enjoy the relaxation of a less strenuous practice, they are forced to continue their efforts unceasingly to protect what savings they have made or to recoup their losses! Losses are frequently incurred through attempts to accumulate more rapidly than conservative saving permitted. In all of our experience we have seldom if ever found a doctor who has built up and kept a substantial estate through successful speculation. Although such a situation is possible, of course, it seems to be the exception rather than the rule.

These errors in the accumulation and conservation of an estate usually seem to be the product of snap-judgment; while the failure to provide for a proper distribution of an estate usually seems to be a result of procrastination. We just postpone making a will, or do not keep it up to date.

In subsequent issues we will write more in detail on some of the following topics, with no thought of attempting an academic treatise but only to discuss informally some observations based on our own experience in dealing with them:

Wills, their importance and their preparation.

Appraisals of Accounts Receivable, their relation to your estate, their effect on federal income and estate taxes.

Estate Study, its importance, factors to be considered and results to be accomplished.

Security, how to prepare for the later years.

Retirement, methods of getting the most out of practices through gradual retirement, junior-senior associations, et cetera.

President's Page

PERHAPS this president's page would be more appropriate at the end of the year, but the work of the committee men and officers of the Society has been so arduous and has required so much personal sacrifice on the part of members that I cannot refrain from calling to the attention of the entire membership these facts. As a group, we are unaware of the amount of effort that is expended. Give your committee men a word of commendation occasionally. They will appreciate it.

Although the future of medicine sometimes looks dark and foreboding, yet when one surveys the united front of men of medicine and knows the spirit of the leaders in the various county societies as well as the state organization, one cannot see anything but constructive and commendable progress. Our objectives are of the highest social ideals.

In over a third of a century of close contact with organized medicine, I have yet to see a sordid or commercial impulse motivate the actions of our medical societies.

Most sincerely,



President, Michigan State Medical Society.

Department of Economics

L. FERNALD FOSTER, M.D., Secretary

TECHNICAL SERVICES

WITH the evolution of plans for hospital insurance, attention has been called to the question of professional services. As the practice of medicine has invoked more and more diagnostic features of the technical variety, it has become more and more difficult to distinguish between "professional" services and "technical" services.

There has developed, in recent years, a very intimate relationship between hospital services and those of pathologists, roentgenologists and anesthetists. This relationship has become more complicated because of the variety of agreements existing between various hospitals and these groups.

In order to set up a working agreement for insurance purposes between hospitals and medical associations, a definition of the various services had to be established. In Michigan, this definition, as established by the Michigan State Medical Society and the Michigan Hospital Association, is as follows:

"It is agreed that the professional services of a doctor of medicine shall not be included in group hospital service programs. Technical services may be rendered as hereinafter defined: Technical services, in connection with hospital and medical service plans, are not considered professional medical services unless rendered directly by a doctor of medicine. Notwithstanding the above definition, it is agreed that the hospital program will not include any x-ray service."

FEDERAL MEDICINE

BEFORE any system of Federalized Medicine is established in this country, Congress should determine whether it is either financially expedient or necessary. With the national debt increasing steadily, a great doubt exists as to the expediency of adding millions more to this debt when the nation needs, at this time, more than anything else, relief from debt and staggering taxes.

Proponents of Federalized Medicine can scarcely reconcile the need for such a system with the recent annual report of the United States Public Health Service. This

report shows that under our present system of medical service, based on private enterprise and initiative, the health of the American people is steadily improving and, at the present time, the United States is the healthiest country of comparable size and population.

Health is recognized as one of the greatest national assets. If the American people, already heavily tax-burdened, can now boast of better health than any other country, we seriously question the expediency and need of a federalized scheme which is a deterrent to a fine quality of medical care, which is expensive and which is often an omen of further socialistic activities.

POLITICS VS. NECESSITY

ONE of the several illustrations of Socialized Medicine, existing in Michigan, is the care of the afflicted child. Efforts to change the existing Act have disclosed the numerous vices developed under the present system.

Evidently medical and surgical needs have not been the determining factors in rendering care to these unfortunate patients. Deficits developing under administration of the Act can only partially be explained by the unpredictable character of sickness. Political intrigue undoubtedly makes appreciable contribution to the deficit factor.

If conscientious economic investigation could be made of every afflicted child case, if medical and surgical necessity were established in every worthy case, those charged with administering the Act would not be forced to suggest changes in the present statute.

Does not the present afflicted child situation in Michigan illustrate the subject of "Politics vs. Medical Necessity"? Is this not a mere sample of what we might expect if we had a general plan of Socialized or Federalized Medicine, with its interposition of political agency between the patient and his physician?

WOMAN'S AUXILIARY

President—Mrs. P. R. Urmston, 1862 McKinley Avenue, Bay City, Michigan
 Sec.-Treas.—Mrs. R. E. Scrafford, 2210 McKinley Ave., Bay City, Michigan
 Press—Mrs. J. W. Page, 119 N. Wisner Street, Jackson, Michigan

Bay County

The Woman's Auxiliary of the Bay County Medical Society held no regular business meeting during the month of January. This was due to the fact that we sponsored our two Public Relations Meetings on January 12. Dr. Harold A. Miller of Lansing spoke at both meetings on the subject of "Sex Education". A year ago we secured a speaker to talk to all of our high school boys on the subject of syphilis. We were, therefore, anxious to do as much for the high school girls this year. So during the afternoon of January 12, Dr. Miller discussed "Sex Hygiene" before a group of eleven hundred senior high school girls.

In the evening of the same day Dr. Miller spoke again at the Bialy Nurse's Home to a group of two hundred and fifty people.

The Auxiliary met on the evening of February 8, 1939, at the home of Mrs. G. M. Brown. Twenty-five members enjoyed a very fine dinner prepared by our food committee.

Immediately following the dinner we listened to a talk by Dr. Merritt, our County Health Administrator. He discussed the important part that a Health Unit plays at the time of a public catastrophe.

Following Dr. Merritt's speech a short business meeting was held. Each member present was given a copy of the pamphlet "On the Witness Stand" which deals with the facts of Health Insurance. Mrs. Urmston, our State President, stressed the importance of studying this in order that we may each make ourself an intelligent influence in the community on this present day vital question. We plan to devote a part of each future meeting to discussing the subject of Health Insurance.

(Mrs. W. S.) LYNN J. STINSON,
Corresponding Secretary

Calhoun County

The Woman's Auxiliary of the Calhoun County Medical Society met Tuesday, February 7, at Leila Hospital in Battle Creek, to sew for the hospital. Twenty-five members were present and 170 articles were completed. Mrs. Harry Becker, in charge of the day's activities, was assisted by Mrs. W. A. Royer and Mrs. Sherwood Winslow. Lunch was served in the Nurses' Recreation Room, followed by a business meeting, presided over by the president, Mrs. C. G. Wencke. Reports were given of the State Board Meetings in Detroit and Saginaw by Mrs. Wencke and Mrs. L. R. Keagle. Mrs. Becker also gave a report on the Christmas baskets furnished by the Auxiliary. Plans were made for sewing at Community Hospital in March.

Ingham County

Ingham County Medical Auxiliary is indeed proud of its president, Mrs. Vander Zalm. This is her second year of splendid service and we owe much of our activity and enthusiasm to her untiring efforts. Every month brings us new information and entertainment.

December was full of the work of the group, ending at Christmas with donations to the Children's Home and Contagious Hospital.

Meetings have been well planned and the speakers

included such outstanding representative persons as our own member, Mrs. L. G. Christian, State president-elect, Rev. Fr. John Gabriels, Mr. William Burns, and Dr. L. G. Christian. For the last meeting Mrs. Caroline Longyear brought us her firsthand observations of the activities in our national capitol. This meeting was open to the doctors and friends, and the Dutch lunch which followed was greeted with enthusiasm.

In every way the officers and committees are functioning to bring to the Auxiliary, meetings worthy of such a fine group of people.

Jackson County

The regular monthly meeting of the Women's Auxiliary was held Tuesday evening, February 21, at the Hayes Hotel.

Following the dinner, Mrs. R. H. Alter, president, conducted a short business meeting. Routine reports were read at this time.

A musical program had been jointly arranged by Mesdames T. E. Schmidt and F. Van Schoick. Mrs. Bullen, program chairman, introduced the two artists, Mrs. Luther Pahl, violinist, and Mrs. Glen Halik, pianist, who gave the following delightful musical numbers:

Chanson Arabe	Rimsky-Korsakoff-Kreisler
La Fille Aux Cheveux de Lin	Dé Bussey
Widmung	Schumann-Liszt
Canzonetta	D'Ambrosia
17th Century Dance	Anonymous
Claire de Lune	De Bussey
Malaguena	Lecuona

The social co-chairmen for the evening were Mesdames Anderson and Chabut.

(Mrs.) ANNA HYDE SHAEFFER,
Press Chairman

Kalamazoo

Mrs. Walter Den Bleyker was hostess to the Woman's Auxiliary of the Academy of Medicine on February twenty-first. Twenty-five members enjoyed a coöperative dinner at six-thirty in the evening.

Following the business meeting, Mrs. Leslie H. Rayle gave an interesting talk on, "Collecting Old Glass", showing many rare and lovely pieces.

(Mrs. Hugo) BARBARA K. AACH,
Publicity Chairman

Kent County

Our last auxiliary was stimulating to say the least. Mr. Leo W. Walsh, an alert, young, Grand Rapids lawyer spoke to us on the ever fascinating subject of our own American government and though needless to say we all did not agree with him, his talk, nevertheless, was well worth hearing.

At the business meeting which was ably conducted by Mrs. Joseph B. Whinery, our vice-president, an announcement was made concerning the hobby show which will take place on April 12 in the home of Mrs. O. H. Gillett, general chairman. Presiding at tea were Mrs. Henry J. Pyle, and Mrs. Harold C. Robinson. Mrs. Daniel DeVries and Mrs. Paul W. Kniskern were hostesses.

JANE R. FRANTZ, *Press Chairman*

MICHIGAN'S DEPARTMENT OF HEALTH

Lapeer County

The auxiliary of the Lapeer County Medical Society met at the home of Mrs. H. B. Zemmer on Friday, February 10, for a pot-luck supper, twelve ladies being present. A short business meeting was held after which Mrs. W. B. Kiehle described the work of the Lapeer Credit Bureau of which she has charge. This bureau not only assists the business and professional man to collect money due him but also helps the person in financial difficulties to budget his income so that he becomes free from debts.

The president, Mrs. H. G. Merz, gave each member a pamphlet entitled, "On the Witness Stand—Facts About Health Insurance". This was discussed at the meeting, March 10, when Mrs. F. R. Hanna entertained the Medical Auxiliary.

MRS. D. J. O'BRIEN, *Press Chairman*

Monroe County

The Woman's Auxiliary of the Monroe County Medical Society had for their February meeting a supper lecture. The speaker was Mr. Rapson, Principal of the Lincoln School, Monroe, who addressed the members on "Juvenile Delinquency."

As our community service project for this winter, the Woman's Auxiliary is placing in the grade schools of the city, copies of children's health playlets. These are being presented at local school assemblies by the children in the lower grades.

It is hoped that with increased Health Habit Propaganda some improvement may be seen in local health conditions.

(Mrs. Vincent) MARTHA BARKER

Washtenaw County

The winter activities of the recently organized Washtenaw County Medical Auxiliary have been varied and well attended by its members.

For their December 12th meeting Mrs. R. Bishop Canfield entertained the group at a very beautiful tea. Unusual arrangements of spring flowers were used about the spacious rooms. Mrs. John Sunwald and Mrs. Albert C. Furstenberg poured.

A former Ann Arbor resident, Mrs. Lawrence Hess of Jackson, spoke on social hygiene before the members and their guests in the terrace room of the Michigan Union at their January 10th meeting. Plans for a benefit bridge in April were discussed as a means for raising funds for their various projects.

Red and white carnations in low ivory holders were used with red tapers at the tables for the formal dinner given by the Medical Society and Auxiliary on February 14th. Gardenias marked the places of the women, most of whom were already wearing their valentine corsages.

After the dinner, served in a private dining room at the Michigan Union, Dr. John W. Kemper, president of the society, spoke briefly on the work of the Auxiliary and introduced its president, Mrs. Karl Malcolm, and Mrs. Geo. Muehlig, secretary and general chairman of arrangements for the dinner.

Dr. A. C. Curtis showed colored motion pictures of a hunting and fishing trip made on Lake Superior. Many of the group later attended the Faculty-Alumni Dance held at the Union.

(Mrs. C. Howard) CECILIA GRAHAM ROSS,
Press Chairman

MICHIGAN'S DEPARTMENT OF HEALTH

DON W. GUDAKUNST, M.D., *Commissioner*
LANSING, MICHIGAN

VENEREAL DISEASE DIRECTOR APPOINTED

Dr. Thomas E. Gibson, formerly associated with the W. K. Kellogg Foundation in charge of the Van Buren County Health Department, assumed his duties March 1 as director of the Venereal Disease Division of the Michigan Department of Health, it was announced by Dr. Don W. Gudakunst, state health commissioner. In his new position, Dr. Gibson will direct the Department's program for the eradication of syphilis and gonorrhea in Michigan. He succeeds Dr. Russell E. Pleune who recently resigned to accept a position as director of the Houghton-Keweenaw Health Department.

In announcing Dr. Gibson's appointment, the state health commissioner said that all physicians were being notified of the Department's policy regarding laboratory examinations and the distribution of drugs for the treatment of syphilis. Restrictions limiting this service only to indigents have been removed, he said. Blood tests and darkfield examinations for syphilis and microscopic examinations for gonorrhea are now made free of charge for all cases. These examinations are made at the central laboratories in Lansing or at the branch laboratories located at Grand Rapids, Houghton and Powers.

Subsidies have been made to the health departments of the larger cities, said Dr. Gudakunst, which permit them to render the same free service on laboratory examinations. These cities include Detroit, Bay City, Flint, Saginaw, Pontiac, Grand Rapids, Jackson, Kalamazoo and Lansing.

Free drugs for the treatment of syphilis are also available for all practicing physicians. These drugs, including neoarsphenamine, bismuth and mapharsen, are available from full-time county and city health departments or directly from the Michigan Department of Health.

The commissioner urged the prompt reporting of all cases of syphilis. "With the cooperation of the practicing physicians, the hospitals and clinics," said Dr. Gudakunst, "the extent of our problem can be determined and effective control measures organized."

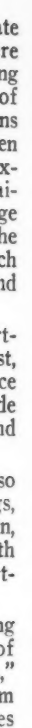
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SCHOOLCRAFT COUNTY MATERNITY SERVICE

The Bureau of Maternal and Child Health has announced plans for the establishment of a maternity service in Schoolcraft County to be carried on in cooperation with the local physicians and under the immediate supervision of Dr. E. J. Brenner, director of the Alger-Schoolcraft Health Department. Physicians wishing to avail themselves of this service for their patients will clear all applications through Dr. Brenner's office at Manistique.

The Schoolcraft County maternity service will be made possible by funds granted to Michigan under the maternal and child health provisions of the Social Security Act. In addition to making it possible for mothers to secure a high standard of

(Continued on page 346)



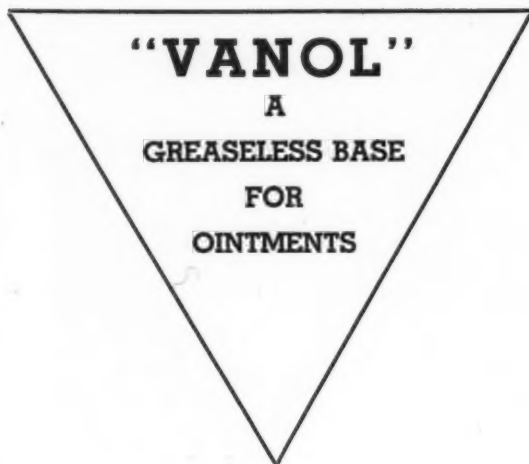
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Vanol will carry any medication that petrolatum will carry, and the medication becomes immediately active on application and penetrates instantly to the source of irritation. Products made with the Vanol base are clean to apply and thirty to fifty per cent more absorbent and effective than those made with the old traditional grease base.

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P. S. You will be surprised at the effectiveness of Ephedrine prepared with the Vanol base.

**VANOL CHEMICAL
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Detroit, Michigan

medical care, the new service is designed to raise the value of good medical care in the minds of the general public. With this value in health and dollars definitely shown, it is hoped that there will be a greater appreciation of the need for necessary medical care for mothers and children.

* * *

REGIONAL HEALTH CONFERENCES

The second round of Regional Health Conferences with the staffs of the local health departments was begun Friday, February 24, with a very successful meeting at Mt. Pleasant. The sessions were held at Central State Teachers College with Dr. F. R. Town as host. Departments represented at the meeting included Bay, Isabella, Midland, Mecosta-Osceola, Wexford and District No. 7, including Clare, Gladwin and Arenac counties.

The general session in the morning was devoted to a discussion of public health nursing problems, sanitation and industrial hygiene. Following a discussion at luncheon of problems connected with Mexican labor in sugar beet areas, the group broke up in the afternoon for round table discussion of matters of interest to health officers, to nurses and to sanitarians. Group leaders included Dr. Carey P. McCord, director of the Bureau of Industrial Hygiene; Miss Helen Bean, director of the Bureau of Public Health Nursing; and William Cary and LaRue Miller, sanitary engineers.

* * *

UNDULANT FEVER CAUSE FOUND

The undulant fever outbreak resulting in the death of one student and the illness of 48 others at Michigan State College was caused by defective plumbing combined with the use of a faulty sterilizer in the bacteriology laboratory, it has been reported by Dr. A. W. Newitt, in charge of the Bureau of Epidemiology of the Michigan Department of Health.

Back-siphonage of contaminated water from a sink in the basement of the undulant fever laboratory and its spread through the bacteriology building's distributing system to all outlets on the second and third floors has been demonstrated by state sanitary engineers. Glassware used in growing undulant fever cultures was washed at this sink after being removed from a steam sterilizer. Tests indicated that living germs were present on the glassware after it had been in the sterilizer for one hour. This had been considered ample time to kill the germs, Dr. Newitt said, and would have been if the apparatus had functioned properly.

Immediate causes of the outbreak have been corrected and there is now no danger of infection to students working in the laboratories.

* * *

GRAND TRAVERSE TO ORGANIZE HEALTH DEPARTMENT

Grand Traverse County Board of Supervisors voted January 21 to establish a full time county health department. The department will be organized as soon as trained personnel can be obtained and is expected to be in operation by April 1. With the organization of this populous area, there remain but two counties, Leelanau and Benzie, in the northern part of the Lower Peninsula with no full-time health service. Grand Traverse will be the fifty-ninth Michigan county to establish a full-time health department.

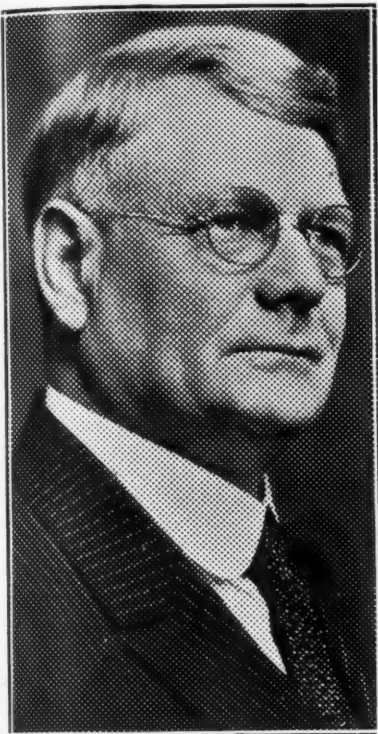
IN MEMORIAM

IN MEMORIAM

Robert E. Miller, M.D.

Dr. Robert E. Miller, Lansing's oldest physician in point of service, died on March 1, following a long illness. Dr.

Miller was born in New York State in 1869. After graduation from the University of Michigan Medical School in 1890, he began to practice in Lansing. He was also married the same year. Dr. Miller was a past president of the Ingham County Medical Society, and an honorary member of both the County and State Medical Societies. He was an active member of the Masonic Order and was a trustee of the Methodist Church. He is sur-



vived by his wife and son, Dr. Harold A. Miller, who is chairman of the Michigan State Medical Society Legislative Committee.

* * *

George H. Lamley, M.D.

Dr. George H. Lamley of Blissfield, Michigan, died early in March. He was born in 1877. Dr. Lamley attended the University of Michigan Medical School where he was graduated in 1901, and was licensed to practice the following year. He was a member of Michigan State Medical Society and the American Medical Association.

* * *

Charles Roy Davis, M.D.

Dr. Charles Roy Davis of Detroit, died of heart disease in March. Dr. Davis was one of Detroit's outstanding surgeons for nearly thirty years. He was born November 15, 1882, in Fort Madison, Iowa, and came to Detroit in 1910. He was graduated from Ouachita College, Arkadelphia, Arkansas, and from Cornell University Medical College in 1908. He married Miss Marie Schaper of Fort Madison in 1915. Dr. Davis was on the staff of Grace and Parkside Hospitals for sixteen years, and was the first surgeon of the Packard Motor Car Company. He was a member of the Wayne County, Michigan State and American Medical Association, a fellow of the American College of Surgeons, and was a member of the Citizens League, the Detroit Athletic Club and also was a Mason. Dr. Davis was on the faculty of the Wayne University College of Medicine. He leaves his wife, a son, John, and a sister, Mrs. C. P. Phillips.

APRIL, 1939



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Physicians are invited to write for descriptive literature and certified analyses.

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IN MEMORIAM

Stephen H. Knight, A.M., M.D.

A Tribute by a Lifelong Friend, Dr. Rollin Stevens of Detroit.

It was in the fall of 1889 that my acquaintance and friendship with Stephen H. Knight began, which increased with the years into ever-deepening respect, admiration and love.

How vividly the first meeting stands out in retrospect after the vicissitudes of fifty years in medicine with a friend, confrère, companion and advisor!

I was just out of college, having graduated from the Homeopathic College of the University of Michigan at the inexperienced age of 21 and was just entering upon my life's work as an interne in a new organized hospital. With awe and admiration I gazed at the graduate of Harvard and of the New York Homeopathic Medical College, an experience of several years in a New York Hospital Clinic and a year's experience as the first House Surgeon of Grace Hospital, Detroit.

A short time later I met Mrs. Knight, also a New Englander, and I learned that Dr. and Mrs. Knight had been sweethearts since childhood. It was in their home that I was introduced in characteristic New England fashion to Boston baked beans and brown bread. How delicious they were, especially after the monotonous, tasteless hospital diet!

No one entertained the internes and nurses of the hospital as liberally as the Knights.

One of Dr. Knight's characteristics was a love of nature. And here again was exhibited a congeniality of the life companionship in the common interest in gardening of Dr. and Mrs. Knight. In late years my wife and I enjoyed several happy visits at their island summer home on the Detroit River opposite the Livingstone Channel and we had most interesting conversations concerning the

flowers and trees in their lovely garden and the birds that frequented it. Mrs. Knight was for many years an Officer of the Detroit Garden Club.

Trained in a homeopathic college, and coming to the Grace Hospital in the year of its founding as a homeopathic hospital, Dr. Knight consistently remained loyal to that branch of medicine, continuing always as a faithful member of the American Institute of Homeopathy, as well as, later, a member of the American Medical Association. His education, training and personality won the respect and admiration of men in both branches of medicine so that he worked harmoniously with recognized ethical physicians regardless of their school of thought. While recognizing and utilizing the many scientific advances in diagnosis and therapy of modern times, in general, with these exceptions, he prescribed the homeopathic remedies he had always been accustomed to use.

Though surgery was his specialty he remained until the day of his death the loved family physician—unfortunately an almost obsolete class in metropolitan areas today. So he is mourned by hundreds of families whose children have grown up under his care and who now, even in middle life, have known no other physician.

He was most loyal to Grace Hospital. At the first and nearly all subsequent graduations of nurses he officiated in one capacity or another, always being perhaps the most active member of the Training School Committee.

He was one of the pioneers of more than forty years ago in initiating the addition of clinical programs to the regular monthly business meetings of the medical staff at a time when such programs were unusual for hospitals.

He was Chief of the Medical Staff for many years up to the time of his death, conducting the meetings in good parliamentary form, and rarely did he miss one of the meetings.

Equally loyal to his Alma Mater, Harvard University, he was the oldest and most beloved member of the Harvard Club in Detroit, of which he occupied every office up to trustee. He was elected president several times and was usually called upon to act as toastmaster at the various club functions. Officiating thus was a fine art with him.

Just as devoted was he to the Sons of the American Revolution whose tenets he always held sacred. Nothing riled him more than evasion, belittling or attack upon the Constitution of the United States. No more loyal citizen could be found. Mrs. Knight had kindred interests in the D. A. R.

In politics, always an ardent Republican, he naturally had many spirited arguments, both spoken and written, against what he considered the alarming tendencies of present-day federal, state and local government.

Though his church affiliations were Congregational, being a loyal and faithful attendant, again his broad-mindedness was evidenced in his close friendships with those of different religious beliefs.

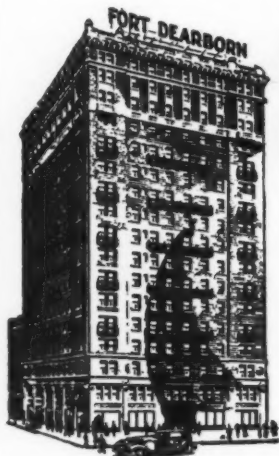
From his well-stored mind and broad, cultured outlook on life he was able to contribute much to the betterment of Society. In his modest unassuming way in conversation with his friends, both in and out of the medical profession, in public speaking and in writing, he unwittingly contributed to a broader Social Service than that generally implied in that term. It was that which inspired higher ideals and a better philosophy of life in general.

His warm, loyal, devoted friendships will ever remain as an inspiration and a beautiful loving memory to all those who were so fortunate as to have been numbered among the friends of Stephen H. Knight.

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CHICAGO

CORRESPONDENCE

CORRESPONDENCE

Paul R. Urmston, M.D.,
Chairman of Council of MSMS,
Bay City, Michigan

My dear Dr. Urmston:

At a meeting of the Hillsdale County Medical Society of March 2, there was placed before us the new group hospitalization and medical care program.

As delegate from the Hillsdale County Medical Society, I am aware that many of these plans have already been thoroughly analyzed and discussed before the House of Delegates of the MSMS and I proposed to our society that we go on record unanimously supporting the State organization rather than to support any individual county plans. This motion was carried unanimously and I have been instructed to inform you of our action.

So without any formal resolution, Dr. Urmston, in behalf of the Hillsdale County Medical Society, I wish to state we intend to support and cooperate with you and The Council in whatever plans you may evolve concerning the organization of a hospital and medical care program.

As delegate from this Society, I personally want to offer my support and assistance in whatever capacity I may serve.

Very sincerely yours,
(Signed) LUTHER W. DAY, M.D.

At its meeting of February 7, 1939, the Calhoun County Medical Society unanimously adopted the following resolution in appreciation of the enormous amount of work being and having been done by The Council of the Michigan State Medical Society and the Committee on Distribution of Medical Care:

WHEREAS, a tremendous amount of work is being done by The Council and committees relative to insurance plans and

WHEREAS, the membership of the Society must demonstrate faith in these groups,

BE IT RESOLVED, that this Society go on record as endorsing the action and efforts of The Council and Committee on Distribution of Medical Care in connection with the development of Hospital and Medical Service Plans and that this Society accord The Council and Committee a vote of confidence in their work and efforts.

* * *

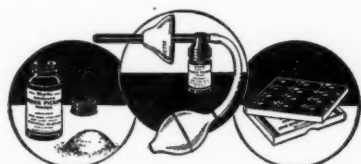
Letters re House Bill 215 have been received from various state organizations. The Chairman of the Legislative Committee of the Michigan State Nurses' association comments on House Bill 215 as follows: "I personally have been interested in this means of decreasing the cost of medical care for a good many years, and I hope that the principle can be applied to nursing eventually. I have discussed the advisability of asking for an enabling act for nursing at this session of the Legislature with other members of the Michigan State Nurses' Association, and we have decided to postpone such a request until the next session of the Legislature.

"There are several reasons for this decision; First of all, we do not wish to do anything to

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—and multiply these amounts of milk, water and HYLAC by the weight of the baby.

Example

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YOUR PRESCRIPTION	YOUR PRESCRIPTION
15 ozs. Milk	18 ozs. Milk
10 ozs. Water	12 ozs. Water
10 measures HYLAC	12 measures HYLAC
(a 4-gram measure is contained in each can of HYLAC)	

Result

YOUR PRESCRIPTION	COMPARED WITH HUMAN MILK	
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jeopardize the passing of the bills for hospital and medical prepayment plans; secondly, we think it will be wiser to profit by the experience of these two groups before setting up a plan for nursing."

* * *

MICHIGAN STATE PHARMACEUTICAL ASSOCIATION

March 16, 1939

Michigan State Medical Society
 2020 Olds Tower Building
 Lansing, Michigan

Attention: Mr. William J. Burns
 Executive Secretary

Dear Mr. Burns:

Replying to your communication regarding the inclusion of pharmaceutical services in the provisions of H.B. 215. We have given the matter much thought and consideration and are of the opinion that it would be inadvisable to write such provisions into the Act at this time.

Section II, Lines 10, 11 & 12, clearly provide that such a program can be perfected and included in the medical care plan to be undertaken, if and when it seems practical to do so in the future. We wish it most definitely understood that we subscribe to the intents and purposes of the bill in question and we congratulate your society on so courageously accepting this great responsibility to provide medical care to the great number of people who will benefit thereby.

Very truly yours,
 (signed) OTIS F. COOK,
 Executive Secretary.

* * *

March 21, 1939

Mr. William Burns, Executive Secretary
 Michigan State Medical Society
 Lansing, Michigan

Dear Mr. Burns:

The members of the Board of Trustees of the Michigan Hospital Association have gone over the provisions of House Bill No. 215 providing for group medical care, and have officially expressed their whole-hearted support of this bill.

Very truly yours,
 (Signed) ROBERT G. GREVE, Secretary,
 Michigan Hospital Association.

* * *

March 8, 1939

The Council,
 Michigan State Medical Society
 2020 Olds Tower
 Lansing, Michigan
 Gentlemen:

The Council of The Wayne County Medical Society, at its meeting of Friday, March 3, 1939, went on record expressing its warm support of the State Society Program of Voluntary Medical Insurance and its action in coöperation with the Hospital Insurance Plan.

The Council desires to record its interest in the establishment of an appropriate Voluntary Insurance Program in Wayne County as soon as circumstances indicate the feasibility of so doing.

Respectfully yours,
 (Signed) J. A. BECHTEL,
 Executive Secretary,
 Wayne County Medical Society.

JOUR. M.S.M.S.

Among Our Contributors

Dr. Carl D. Camp was graduated from the University of Pennsylvania in 1902 and was Instructor in Neurology at the University of Pennsylvania from 1904 to 1907. He has been in charge of the Department of Neurology in the University of Michigan Medical School since 1907.

* * *

Dr. Lawrence S. Fallis was graduated in Medicine, Queen's University, Kingston, Canada, 1919. He received his postgraduate training, London, Edinburgh, and Vienna. He is Fellow of the Royal College of Surgeons, Edinburgh, 1924; Fellow of the American College of Surgeons, 1928; Member of the Founders' Group of the American Board of Surgery, 1937; Associate Surgeon in the General Surgical Division of the Henry Ford Hospital since 1924.

* * *

Dr. L. E. Himler is a graduate of the University of Michigan Medical School, class of 1931. He was instructor in Neurology at the University Hospital from 1933 to 1935, and at present is associate psychiatrist at the University of Michigan Health Service.

* * *

Dr. Paul W. Kniskern is a graduate of the University of Michigan Medical School, class of 1927. He spent three years at the University of Michigan Hospital, the University of Chicago Clinic and the Blodgett Hospital, Grand Rapids.

He located in Grand Rapids in 1930 and his practice is limited to internal medicine.

* * *

Dr. Clyde S. W. Martin is a graduate of the Medical School of the University of Nebraska, 1934. He was Interne and Assistant Resident Surgeon at the Henry Ford Hospital, 1934-37. Since 1937, he has been in private practice in Port Huron where he is a member of the staff of the Port Huron General Hospital.

* * *

Dr. Gordon B. Myers was graduated from the University of Michigan in 1927. He is professor of Medicine at Wayne University College of Medicine, and Director of Medicine, City of Detroit Receiving Hospital.

* * *

Dr. David P. Philips of Jackson, Michigan, was graduated from the Medical Department of Ohio State University in 1916. He served in the Neuropsychiatric division during the World War, also did psychiatric and criminological work in Illinois, Ohio, New York and Pennsylvania. He is now attached with the Department of Correction, Michigan.

* * *

Dr. Roger S. Siddall received the degree of M.D. in 1920 from Johns Hopkins University. He is Assistant surgeon in the department of Obstetrics and Gynecology at Harper Hospital, Consultant in Obstetrics at the Herman Kiefer Hospital, and is Assistant Professor of Clinical Obstetrics and Gynecology at Wayne University, Detroit.



National Association of Chewing Gum Manufacturers, Rosebank, Staten Island, New York

◆ General News And Announcements ◆

100 Per Cent Club for 1939

Ingham County Medical Society
Luce County Medical Society
Manistee County Medical Society
Menominee County Medical Society
Muskegon County Medical Society
Ontonagon County Medical Society
Tuscola County Medical Society

Other County Medical Societies are near the 100 per cent mark—being out of the honorary club by just one or two members not having paid 1939 dues. Help your society to be in the 100 per cent Club.

Senator Carl F. Delano of Kalamazoo addressed the St. Joseph County Medical Society at its meeting on March 9th on the subject of "Coming Legislation."

* * *

Senator Earl W. Munshaw of Grand Rapids was guest speaker at the joint meeting of the Bay County Bar Association and Bay County Medical Society on March 8.

* * *

The fiftieth annual reunion and clinic of the Alumni Association of the Wayne University College of Medicine will be held in Detroit, Wednesday, Thursday and Friday, June 14, 15, and 16. A very interesting program is being prepared. It will be given in full in the May number of this JOURNAL.

* * *

Radio programs were sponsored by the Michigan State Medical Society Radio Committee during the past few weeks as follows:

March 13, 1939—"Legislative Aspects of the Medical Care Plan" by R. Lee Laird, M.D.
March 20, 1939—"Obesity" by Neil Whalen, M.D.
March 27, 1939—"Low Back Pain" by Frederick C. Kidner, M.D.

* * *

The Cliff Dweller, a progressive and wholesome newspaper in Detroit, in its issue of March 1, 1939, carried a worthwhile article entitled "Americans are Healthiest People in World." It gives the need as a voluntary health insurance plan, and emphatically states that Americans do not want compulsory sickness insurance. It goes into detail giving the fallacies of politically controlled medical care.

* * *

The secretaries of the county medical societies in the Upper Peninsula attended the Upper Peninsula Secretaries Conference at Marquette, on Sunday, March 26. Secretary L. Fernald Foster of Bay City and Executive Secretary Wm. J. Burns were present. The chairman of the Public Health Committee in the Michigan House of Representatives, Warren G. Hooper, was a guest at the Conference.

* * *

The new \$400,000 Neuropsychiatric Institute at the University of Michigan will house eighty-three beds, twenty of which will be reserved for children. It will contain the most modern equipment for treating mental disorders. Psychiatric institutes similar

to the one now under construction here are located at the Columbia University Medical Center, Cornell Medical Center, University of Iowa, University of Colorado, and Johns Hopkins.

* * *

Senior and Student Internes are wanted by the California State Personnel Board for vacancies in their state institutions. There is no residence requirement for these examinations and no written test will be given. Applicants will be rated on education, experience and appraisal of scholastic record. Applications may be filed at any time during 1939, and will be rated immediately. If you are interested in further information, write State Personnel Board, 1025 P Street, Sacramento, California.

* * *

On petition of thirty-one physicians, the Van Buren County Medical Society was granted a charter by The Council of the Michigan State Medical Society. The Society is now organized and has elected the following officers for the coming year:

President—William Bope, M.D., Decatur.
President Elect—R. W. Spalding, M.D., Gobles.
Secretary—Charles Ten Houten, M.D., Paw Paw.
Treasurer—A. H. Steele, M.D., Paw Paw.
Delegate—Wm. R. Young, M.D., Lawton.
Alternate Delegate—Edwin R. Terwilliger, M.D., South Haven.

* * *

If you are in an office with one or more physicians and each of you is a Fellow of the American Medical Association, it is likely that all of you receive copies of the *AMA Journal*. We are informed by the American Medical Association that in cases of that kind other scientific publications of the AMA may be substituted for the *Journal*. By this arrangement, one man in the group could elect to take the *Journal*, the others could take some other publications, thus affording that office access to two or more of the several AMA publications without extra cost.

* * *

Crippled and Afflicted Child Commitments for February, 1939, were as follows:

Crippled Child: Total cases, 224, of which 57 were sent to University Hospital and 167 to miscellaneous hospitals. Of the above, Wayne County sent 6 to University Hospital and 48 to miscellaneous hospitals, total of 54 cases.

Afflicted Child: Total cases 1,903, of which 287 went to University Hospital and 1,696 went to miscellaneous hospitals. Of the above 24 were sent to University Hospital and 335 went to miscellaneous hospitals from Wayne County for a total of 359.

* * *

The Annual Spring Clinic of the Ingham County Medical Society will be held at the Hotel Olds, Lansing on May 4th. All members of the Michigan State Medical Society are cordially invited to attend this unusually worthwhile program. The following outstanding physicians will speak:

Louis A. Buie, M.D., Rochester, Minn.
William R. Cubbins, M.D., Chicago.
Richard H. Freyberg, M.D., Ann Arbor.
William E. Leighton, St. Louis, Mo.
Claire L. Straith, M.D., Detroit.
Warren E. Vaughan, M.D., Richmond, Va.

GENERAL NEWS AND ANNOUNCEMENTS

The Wexford County Medical Society held a special meeting on March 7, 1939, at the Northwood Hotel, Cadillac, which was a joint meeting of dentists and physicians. Shattuck W. Hartwell, M.D., of Muskegon and E. F. Sladek, M.D., of Traverse City, MSMS Councilor of the 9th District, were guest speakers. Doctor Hartwell gave an especially fine talk on "Distribution of Medical Care."

"The Wagner Health Bill" was discussed by Doctor Sladek, with its effects on the physicians, dentists and pharmacists. He urged all members present to write personal, longhand letters to their congressmen to help defeat this bill.

* * *

Dr. Clark D. Brooks of Detroit spent part of the winter in St. Petersburg, Florida. While visiting in Florida, Dr. Brooks addressed the Pinellas County Medical Society, on February 17, on the subject, "Surgery of the Gallbladder." There were seven Michigan doctors in attendance at the meeting in addition to a large number of Army and Navy officials, who visit St. Petersburg regularly. They have one of the largest Veteran units in the country, situated on the gulf, which is an ideal location, Dr. Brooks writes. They have accommodation for over a thousand veterans and are making plans now to build an addition.

* * *

Some more of your friends who displayed their products and services at the 1938 Detroit Convention last September. When you have an order, don't forget your friends

Randolph Surgical Supply Company, Detroit, Michigan.
E. J. Rose Manufacturing Company, Detroit, Michigan.
Sandoz Chemical Works, Inc., New York City.
W. B. Saunders Company, Philadelphia, Penna.
Smith, Kline & French Laboratories, Philadelphia, Penna.
E. R. Squibb & Sons, New York, City.
Frederick Stearns & Company, Detroit, Michigan.
Van Hoosen Farms, Rochester, Michigan.
James Vernor Company, Detroit, Michigan.
Wall Chemicals, Inc., Detroit, Michigan.
John Wyeth and Brother, Inc., Philadelphia, Penna.
The Ziemmer Company, Pittsburgh, Penna.
The Zimmer Manufacturing Company, Warsaw, Indiana.

* * *

The American Congress on Obstetrics and Gynecology will be held in Cleveland, Ohio, September 11 to 15, 1939. This Congress is sponsored by the American Committee on Maternal Welfare. Purpose of the program is to present state medical, nursing and health problems from the scientific, practical, educational and economic viewpoints so far as they relate to human reproduction and maternal and neonatal care. The program and exhibits will be presented in such a manner that they will be of value not only to the medical profession but to nurses and all persons and agencies concerned with the problems of human reproduction. Further information may be secured by writing the American Congress on Obstetrics and Gynecology, The Annex, 650 Rush Street, Chicago.

* * *

Michigan physicians were authors of the following articles appearing in recent issues of *The Journal of the American Medical Association*:

"Transurethral Prostatectomy" by R. M. Nesbit, M.D., Ann Arbor, issue of February 25, 1939.

"Fatal Granulocytopenia Following Administration of Sulfanilamide" by H. A. Shecket, M.D., and A. E. Price, M.D., Eloise, Michigan, in the issue of March 4, 1939.

"Treatment of Pneumococcic Pneumonia with Sulfanilamide" by A. E. Price, M.D., and Gordon

APRIL, 1939

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SURGERY—General Courses One, Two, Three and Six Months; Two Weeks' Intensive Course in Surgical Technique with practice on living tissue; Clinical Courses; Special Courses. Courses start every two weeks.

GYNECOLOGY—Two Weeks' Course, June 5th and October 9th. Two Weeks' Personal Course, June 19th. Four Weeks' Personal Course, August 28th.
OBSTETRICS—Two Weeks' Intensive Course, June 19th and October 23rd. Informal Course every week.
FRACTURES & TRAUMATIC SURGERY—Ten-day Formal Course, June 19th and September 25th. Informal Course every week.

OTOLARYNGOLOGY—Two Weeks' Intensive Course starting September 11th. Informal Course every week.

OPHTHALMOLOGY—Two Weeks' Intensive Course starting September 25th. Informal Course every week.
CYSTOSCOPY—Ten-day Practical Course, rotary every two weeks.

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B. Myers, M.D., of Detroit, in the issue of March 18, 1939.

"Citizenship and Medical Licensure" by J. Earl McIntyre, M.D., Lansing, appeared in the issue of March 18, 1939.

* * *

The 1939 Upper Peninsula Medical meeting will held at Escanaba on August 23 and 24. The tentative program is as follows:

Wednesday

12:00 to
2:00 p.m.—Luncheon in honor of MSMS Officers.
2:00 p.m.—Henry F. Helmholtz, M.D., Rochester, Minn.
3:00 p.m.—J. Arthur Myers, M.D., Minneapolis, Minn.
4:00 p.m.—L. G. Christian, M.D., Lansing.
7:00 p.m.—W. W. Bauer, M.D., Chicago.

Thursday

10:00 a.m.—Talk on fractures.
11:00 a.m.—Henry R. Carstens, M.D., Detroit.
12:00 a.m.—John T. Murphy, M.D., Toledo.

All members of the Michigan State Medical Society are cordially invited and urged to attend.

* * *

The American Physicians' Art Association, composed of members in the United States, Canada, and Hawaii, will hold its second Art Exhibit in the City Art Museum of St. Louis, May 14-20, 1939, during the annual session of the American Medical Association. Art pieces will be accepted for this art show in the following classifications; (1) oils, both (a) portrait and (b) landscape; (2) water colors; (3) sculpture; (4) photographic art; (5) etchings; (6) ceramics; (7) pastels; (8) charcoal drawings; (9) book-binding; (10) wood carving, (11) metal work (jewelry). Practically all pieces sent in will be accepted. There will be over 60 valuable prize awards. For details of membership in this Association and rules of the Exhibit, kindly write to Max Thorek, M.D., secretary, 850 Irving Park Blvd., Chicago, Ill., or F. H. Redewill, M.D., president, 521-536 Flood Bldg., San Francisco, Calif.

* * *

The following resolution was adopted by the Legislative Committee at its meeting in Lansing on March 21, 1939:

WHEREAS, The Legislative Committee of the Michigan State Medical Society is the official legislative contact group of the Society so designated by the By-laws of the Michigan State Medical Society,

BE IT RESOLVED, That only the Chairman of the Legislative Committee, Harold A. Miller, M.D. (and his delegated representative or representatives) is hereby authorized to be the official spokesman in all legislative matters for the Legislative Committee and for the entire 4,300 members of the Michigan State Medical Society.

FURTHER, That copies of this resolution be sent to the secretaries and editors of all county medical societies in Michigan, and that it be published in THE JOURNAL, M.S.M.S.

* * *

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons announces that the annual Foundation Prize for this year will be \$100.00. Those eligible include only (1) internes, residents, or graduate students in Obstetrics, Gynecology and Abdominal Surgery, and (2) physicians (M.D. degree) who are actually practicing or teaching Obstetrics, Gynecology or Abdominal Surgery.

Competing manuscripts must (1) be presented in triplicate under a nom-de-plume to the Secretary

JOUR. M.S.M.S.

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of the Association before June 1st, (2) be limited to 5,000 words and such illustrations as are necessary for a clear exposition of the thesis, and (3) be typewritten (double-spaced) on one side of the sheets, with ample margins.

The successful thesis must be presented at the next annual (September) meeting of the Association, without expense to the Association and in conformity with its regulations.

For further details, address Dr. James R. Bloss, Secretary, 418 11th Street, Huntington, W. Va.

* * *

Jack King, well-known news commentator on WJR, the Goodwill Station, gave the following announcement in his broadcast of February 20 after House Bill 215, which provides for non-profit voluntary group medical care plans, was introduced into the Michigan Legislature: "The Michigan State Legislature saw the start today of what may mean the eventual lowering of the cost of medical attention and care for this state's individuals. A bill embodying the recent proposals of the Michigan

State Medical Society, for the formation of voluntary group medical care associations, was introduced by Representatives Dora Stockman, James Stanley and Warren Hooper. The proposed measure (House Bill 215) calls for wider distribution of medical care through non-profit corporations. This care would be given those subscribers who pay a fixed monthly or annual fee. This proposed action may prove a beneficial major long-range accomplishment of this 1939 legislature and one that is highly commendable."

* * *

The Northern Tri-State Medical Association held its annual meeting in South Bend, Indiana, April 11, 1939, at the Hotel Oliver. The speakers on the program were as follows:

Charles G. Johnston, M.D., Professor of Surgery, Detroit College of Medicine—"Physiological Implications in the Management of Intestinal Obstruction."

Waldo E. Nelson, M.D., Department of Pediatrics, College of Medicine, University of Cincinnati—"The Treatment of Diabetes Mellitus in Children."

Frank C. Walker, M.D., Indianapolis, Indiana—"The Relation of Cervical Lesions to Carcinoma of Cervix Uteri."

Daniel P. Foster, M.D., Physician in Charge, Division of Metabolism, Henry Ford Hospital—"Newer Concepts of Diabetes Mellitus."

Harold N. Cole, M.D., Clinical Professor of Dermatology and Syphilology, Western Reserve University School of Medicine—"Relapse in Syphilis, Its Importance in Diagnosis, the Public Health Aspect, and Its Treatment."

A. C. Furstenberg, M.D., Dean and Professor of

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GENERAL NEWS AND ANNOUNCEMENTS

Otolaryngology, University of Michigan Medical School—"Nasal Accessory Sinus Disease in the General Practice of Medicine."

Bruce K. Wiseman, M.D., Associate Professor of Medicine, Ohio State University College of Medicine—"The Cytolytic Functions of the Spleen in Relation to the Blood Diseases."

Norris W. Gillette, M.D., Toledo, Ohio—"Diagnosis and Results of Treatment of Toxic Goitre."

A. Jerome Sparks, M.D., Fort Wayne, Indiana—"Calculi in the Upper Urinary Tract."

David Edwin Robertson, M.D., Assistant Professor of Surgery, University of Toronto—"The Standard Treatment of Infantile Paralysis."

George B. Eusterman, M.D., Clinical Section, Mayo Clinic, Rochester, Minnesota—"Chronic Inflammatory Lesions of the Gastric and Duodenal Mucosa: Their Significance in Medical Practice."

* * *

Industrial Physicians and Surgeons

At the meeting of the Michigan Association of Industrial Physicians and Surgeons to be held at Hotel Olds, Lansing, Wednesday, April 19, 1939, the following program will be presented:

Program

Registration 9:00 A. M.

1. Medical Testimony.
E. I. Carr, M.D., Lansing.
C. F. Jennings, LL.B., Lansing.
Shields, Ballard, Jennings & Tabor.
2. Medical Relations in Industrial Surgery.
Frank T. McCormick, M.D., Detroit.
3. a. The Michigan Fracture Committee of the American College of Surgeons.
b. McMurray Operation for Ununited Fractures of Neck of the Femur with Lantern Slides.
Wm. C. Blodgett, M.D., Detroit.

Associate Professor Orthopedics, Wayne University.

4. Problems in the Application of Occupational Diseases under the Michigan Law.

Col. John L. Boer,

Secretary, Department of Labor and Industry.

5. Rehabilitation of the Industrially Disabled.
(Vocational Training and New Occupations)

Jacob Klaassen,

State Supervisor of Vocational Rehabilitation.

* * *

Wayne University Fiftieth Anniversary

Fellow Alumni:

I have been looking over the plans for our Annual Alumni Clinics. They are exceptionally inviting this year because, as you know, it marks our fiftieth meeting. This year's clinics and reunions have been planned to be a grand Fiftieth Anniversary celebration of an annual event which we all have grown to regard as the high point of each medical year.

This year the faculty of our medical school will present the program as was done last year with such great success. Their presentations will be of scientific but also of practical value to men in practice.

The reunions this year have been especially well organized. Throughout the year contact men in each class have been appointed and through them the classes have been working out their class celebrations. Class reunions will occupy a prominent part in commemoration of this Anniversary and I want to urge all those who are coming to get in touch with their class secretaries or the Secretary of Wayne University College of Medicine Alumni Association, Volney Butler, M.D.

The next two months are going to be exceedingly

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GENERAL NEWS AND ANNOUNCEMENTS

full in making final preparations, but in June we will all have a splendid time together again.

Sincerely yours,
FRED H. COLE, M.D., President
 Alumni Association, Wayne University
 College of Medicine.

* * *

American Congress on Obstetrics and Gynecology

Committee on Maternal and Infant Welfare

The American Congress on Obstetrics and Gynecology is sponsored by the American Committee on Maternal Welfare. This Committee is composed of member organizations with a representative from each, forming the Board. The member organizations include the various national and sectional obstetrical and gynecological associations, hospital associations, public health organizations, and nursing associations.

The Central Association on Obstetrics and Gynecology proposed an American Congress on Obstetrics and Gynecology to study the present-day problems on obstetrics and gynecology and their solution. The American Committee on Maternal Welfare was asked to sponsor this Congress. The Congress will be held in Cleveland, Ohio, September 11-15, 1939. The Committee expresses the purpose of the Congress, "To present a program of our present-day medical, nursing, and health problems, from a scientific, practical, educational, and economic viewpoint as far as they relate to human reproduction and maternal and neonatal care." This Congress is not in any sense a legislative body and naturally will take no action relative to maternal and infant care.

There will be sessions for each professional group in the morning with round-table discussions. The afternoon meetings will have papers of general interest to all members attending the Congress. The public will be invited to the evening sessions, where there will be speakers of national prominence.

The program for the physicians will include among many others such subjects as pregnancy associated with: thyroid disease, heart disease, diabetes, tuberculosis, nutritional factors, carcinoma of the female genital tract, and abortions.

The Congress is not planned as a meeting for specialists in any sense of the word but for all physicians who are interested in the problem of maternal and child welfare. Your Committee highly recommends this Congress as a week of postgraduate work which should be worth while much more to the physician than the time and expense incurred for the trip. The physicians of this state should be well represented at this Congress.

The membership fee of \$5.00 includes membership in The American Committee on Maternal Welfare and registration in The American Congress on Obstetrics and Gynecology. Application blanks and further information may be secured from your chairman, or from The American Congress on Obstetrics and Gynecology, 650 Rush Street, Chicago, Illinois.

* * *

Michigan Pathologists Meet

The regular meeting of the Michigan Pathological Society was held at the Henry Ford Hospital, Detroit, Michigan, February 11, 1939. Demonstration material was presented in one of the laboratories of the teaching building. Members displayed a collection of "Problem Cases." A scientific program was announced by the president, Dr. O. W. Lohr.

Dr. Frank W. Hartman presented an excellent paper illustrated with lantern slides, the title of which was "Certain Lesions of Anoxia in Experimental Animals and in Man." The paper was discussed by Dr. G. Steiner, Dr. M. Gates, and Dr.

APRIL, 1939

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C. Weller. Dr. A. H. Ahronheim presented a case of multiple peripheral hemorrhages with gangrene in a child, which he felt should be classified as purpura hemorrhagica. The appearance of peripheral thrombi in the arteries seemed, however, to be the chief pathological problem, not conforming with the diagnosis of essential purpura. Dr. M. Madsen presented two cases of adrenal hypertrophy in infants associated with vomiting and malnutrition. In discussion Dr. O. M. Gruhzt mentioned that in guinea pigs similar lesions of the adrenals accompany scurvy. Dr. Weller thought that the adrenal changes were a persistence of fetal type adrenals although this probably threw no light on the pathogenesis of the syndrome. Dr. O. W. Lohr showed a case of lung and retroperitoneal tumors. The problem involved concerned the question of a primary. The tumor cells were phagocytic for polymorphonuclear leukocytes. Dr. R. J. Parsons presented a case of pulmonary tuberculosis with military dissemination. In one adrenal a caseous granulomatous lesion was observed which was atypical histologically for tuberculosis and from which acid-fast microorganisms were not demonstrable. However, in this lesion, peculiar yeast-like intracellular lesions were found in both parenchymal and macrophage cells which were identified as *Histoplasma capsulata* (Darling). Dr. Wilhelm demonstrated a case diagnosed as Kaposi's multiple hemorrhagic sarcoma. In discussion there was some controversy concerning the histogenesis of this neoplasm, some thinking that morphologically it resembled chorioepithelioma. Dr. G. R. Backus demonstrated an interesting case of muscle atrophy and paralysis which he diagnosed as amyotrophic lateral sclerosis. Dr. F. W. Hartman and Dr. Kerr demonstrated material from a case of human rabies with proof of the nature of the disease by guinea pig inoculation. Beautiful Negri bodies were seen in the guinea pig brain preparations. Dr. J. Kasper had taken part in the guinea pig inoculation experiments. The business meeting followed, after which the meeting was adjourned.

The next meeting is to be held on April 15, 1939, at the William Seymour Hospital, Eloise, Michigan. Subject will be "Pathology of the Kidney" with special emphasis on tumors. This meeting will be held as a joint meeting with the Detroit chapter of the American Urological Association. All interested are invited to attend. Specimens will be on display at 3:00 in the afternoon. Dinner will be served at about 6 o'clock and a scientific program will follow the dinner.

* * *

Physicians who have addressed county medical societies and lay groups during the past month include:

L. Fernald Foster, M.D., Bay City, discussed "Federalized Medicine" before the Manistee County Medical Society at noon on February 20. At 3:00 p.m. Doctor Foster addressed the Lakeside Woman's Club on the same subject.

Wm. Welch, M.D., Lansing, addressed the Clinton County Medical Society on the subject of "Surgical Treatment of Peptic Ulcers," illustrated with a moving picture, on February 28. Paul H. Jordan, M.D., Ann Arbor, addressed the same meeting on "Some Phases of Child Psychology."

C. E. Merritt, M.D., Bay City, addressed the YMCA Mothers of Saginaw and Bay City at Bay City on March 1, on the subject of "Socialized Medicine."

Norman R. Kretzschmar, M.D., Ann Arbor, discussed "The Radiation Therapy of Benign Uterine Bleeding," before the Oakland County Medical Society on March 1.

C. S. Tarter, M.D., Bay City, addressed the Wex-

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GENERAL NEWS AND ANNOUNCEMENTS

ford County Medical Society on March 2, on the subject of "Fractures of the Femur."

Burton R. Corbus, M.D., Grand Rapids, discussed "Federalized Medicine" before the Kalamazoo Lions Club on March 7, in Kalamazoo.

Shattuck W. Hartwell, M.D., Muskegon, addressed the Cadillac Rotary Club on March 7, on the subject of "Federalized Medicine."

L. Fernald Foster, M.D., Bay City, spoke on "What Federalization Means to the Professions of Medicine and Dentistry" before the 8th District Dental Meeting in Bay City on March 15. Doctor Foster addressed the Michigan Association of University Women of Bay City on "Federalized Medicine" on the same date.

M. Edward Davis, M.D., Chicago, presented a paper on "Present Day Diagnosis and Treatment of Hemorrhage Late in Pregnancy" before the Berrien County Medical Society on March 16.

Wells Thom, M.D., gave a talk on "Medical Practice in Arabia" on March 16, at the meeting of the Eaton County Medical Society.

Wm. J. Cassidy, M.D., Detroit, talked on "Surgical Procedures" before the Monroe County Medical Society on March 16.

W. D. Towsley, M.D., and N. R. Kretschmar, M.D., of Ann Arbor, presented papers at the Shiawassee County Medical Society meeting on March 16. Doctor Towsley discussed Inter-Uterine Respiration, illustrated by colored pictures, and Doctor Kretschmar spoke on "Toxemias of Pregnancy."

Robert S. Breakey, M.D., Lansing, spoke before the Lenawee County Medical Society on the subject of "Urinary Tract Calculus," on March 21.

Plinn F. Morse, M.D., Detroit, discussed "Sudden Causes of Death" before the Ingham County Medical Society, on March 21.

Richard Davison, M.D., Chicago, addressed the Kalamazoo Academy of Medicine on March 21, on the subject "Surgical Treatment of Pulmonary Tuberculosis."

Lawrence Reynolds, M.D., of Detroit, appeared before the Jackson County Medical Society, on March 21, and discussed "Cystic Disease of the Lung."

E. D. Spalding, M.D., Detroit, presented a paper on "Heart Conditions" before the Bay County Medical Society, on March 22.

Harold Henderson, M.D., Detroit, addressed the St. Clair County Medical Society on the subject of "The Middle-aged Woman," at its meeting of March 28.

* * *

Group Hospitalization

The Michigan Society for Group Hospitalization is located in the Washington Boulevard Building under the directorship of Mr. John R. Mannix. The officers are: President, William J. Griffin, Attor-

ney; Vice President, Stewart Hamilton, M.D.; Treasurer, W. L. Babcock, M.D. The trustees are Howard A. Coffin, Percival Dodge, Rev. J. L. Ernst, Charles E. Findlay, Walter S. Foster, Robert C. Greve, Leon Harrington, Ralph M. Hueston, Rev. Joseph McIsaac, I. R. Peters and Mrs. George Wadley. The participating hospitals to date (March 20) are: R. B. Smith Memorial Hospital at Alma; St. Joseph's Mercy Hospital and the University Hospital, Ann Arbor; the Leila Y. Post Montgomery Hospital, Battle Creek; Mercy Hospital of Bay City; Alexander Blain Hospital, Children's Hospital, Delray General Hospital, East Side General Hospital, Evangelical Deaconess Hospital, Florence Crittenton, Grace, Harper, Henry Ford, Mt. Carmel Mercy, Parkside, Providence, St. Joseph's Mercy, St. Mary's, Woman's and Trinity Hospitals, Detroit; Lee Memorial Hospital, Dowagiac; Eloise Hospital and Infirmary, Eloise; Hurley Hospital, St. Joseph's Hospital, Women's Hospital, Flint; Goodrich General Hospital, Goodrich; Grayling Mercy Hospital, Grayling; St. Joseph's Hospital, Hancock; Oceana Hospital, Hart; Highland Park General Hospital, Highland Park; McPherson Memorial Hospital, Howell; Mercy Hospital, Jackson; Borgess Hospital and Bronson Methodist Hospital, Kalamazoo; Edward W. Sparrow Hospital, St. Lawrence Hospital, Lansing; the Paulina Stearns Hospital, Ludington; Mercy Hospital and Sanitarium, Manistee; St. Luke's Hospital, Marquette; Monroe Hospital, Monroe; Petoskey Hospital, Little Traverse Hospital, Petoskey; Pontiac General and St. Joseph's Mercy Hospitals, Pontiac; Saginaw General, St. Luke's and St. Mary's Hospitals, Saginaw; St. Joseph Sanitarium, St. Joseph; Chippewa County War Memorial Hospital, Sault Ste. Marie; Wyandotte General Hospital, Wyandotte; Beyer Hospital, Ypsilanti. More hospitals will be included in the list by the time this JOURNAL is in the hands of the readers.

Complete hospital care is provided for the worker and his entire family at the rate of sixty cents a month for ward service and seventy-five cents a month for semi-private room service. For husband and wife, ward service is \$1.20 a month and semi-private is \$1.50, and for the subscriber and wife and all children from one to nineteen years of age, ward service is \$1.50 a month and semi-private service is \$1.90. The following services are provided to each member of the family on the recommendation of their family physician: (1) Twenty-one days of Hospital Care each year for the worker and twenty-one days each year for every member of his family; (2) Meals and Dietary Service; (3) General Nursing Care; (4) Use of the Operating Room as often as necessary; (5) Maternity Care after the contract has been in effect for twelve months; (6) Anesthesia (when administered by a salaried employee of the hospital); (7) Routine clinical laboratory serv-

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ice; and (8) All ordinary drugs and dressings. What is included under the term Routine Laboratory Service is not clearly defined, but will doubtless vary with the location of the hospital. X-ray examinations are not included. The contract with the subscriber includes anesthesia by a salaried anesthetist of the hospital, but does not include any services rendered by a medical doctor.

The Michigan Society for Group Hospitalization is a non-profit organization of Michigan hospitals. It is endorsed by the Michigan Hospital Association, the American Hospital Association, the American College of Surgeons and the Michigan State Medical Society.

The expense of hospitalization is met entirely by the subscriber, who, in his application for membership in the group, authorizes his employer to deduct the cost each month from his wages.

* * *

Estimate 48,000,000 Cases of Trichinosis in the United States

The recent evidence from autopsies that 36 per cent of the inhabitants of Cleveland have trichinosis must not be interpreted as proof that that city is the most highly infested area in the United States, *The Journal of the American Medical Association* for March 18 says.

Such evidence suggests rather that the routine diagnostic methods employed by earlier investigators are fallacious, *The Journal* points out. Routine examinations of the diaphragms of adult cadavers by the Baermann digestion method has led previous investigators to the conclusion that approximately 13.67 per cent of all persons in or around Washington, D. C., are infested with trichinae, 17.5 per cent in Minneapolis and Rochester, N. Y., 24 per cent in San Francisco and 27.6 per cent in Boston.

The editorial states that C. H. Evans, M.D., of the Institute of Pathology, Cleveland, supplemented this routine diagnostic method by application of a newer technic. Combining all positive data, Evans found thirty-six positive cases of trichinosis in the first hundred Cleveland autopsies studied by his double technic.

"Applying the implied correction coefficient to the percentages previously reported from other cities," the editorial says, "one would conclude that there are presumably the following percentages of trichina infestation in other American cities: Washington, D. C., 24.6 per cent, Minneapolis and Rochester, N. Y., 31.5 per cent, San Francisco 43 per cent and Boston 49.7 per cent, an average of 37 per cent infestation of the urban population of the United States.

"There is no way, of course, of estimating the resulting social or economic loss; but the estimated 48,000,000 cases of trichinosis in the United States are far from being a national asset."

* * *

COUNCIL AND COMMITTEE MEETINGS

1. Sunday, March 12, 1939—Public Relations Committee—Hotel Olds, Lansing—4:00 p. m.
2. Sunday, March 19, 1939—Executive Committee of The Council—Hotel Statler, Detroit—2:00 p. m.
3. Sunday, March 19, 1939—Committee on Scientific Work—Hotel Statler, Detroit—1:00 p. m.
4. Tuesday, March 21, 1939—Legislative Committee—Hotel Olds, Lansing—6:00 p. m.
5. Wednesday, March 22, 1939—Maternal Health Committee—Hotel Statler, Detroit—12:00 noon.
6. Tuesday, March 28, 1939—Medical-Legal Committee—Hotel Olds, Lansing—6:00 p. m.

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